The Role of Malaysian Residential Properties in a Mixed Asset Portfolio

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Abstract

This study examines the role of Malaysian residential properties in providing portfolio diversification benefits in Malaysian mixed asset portfolios. The mixed asset portfolio comprises shares (represented by Kuala Lumpur Composite Index, Kuala Lumpur Second Board Index, Kuala Lumpur Property Sector Index), bond (represented by Malaysian Government Securities Index) and Malaysian residential properties (represented by the Malaysian House Price Indices for the various house types and geographical locations). The mean-variance framework is used to determine the optimal asset allocations in terms of preferred house types and geographical locations with other financial assets for the 1Q2000-3Q2006 study period.

The findings of this study demonstrate that ex-post efficient portfolios typically devote a significant allocation to residential properties (up to 66.68%), which will improve the risk-adjusted performance up to 73.87%. Further improvement of risk-adjusted returns can be achieved (up to 89.79%) by adding one more different residential property class into the mixed asset portfolios that already consists of one residential property class. Investors are also able to construct well diversified mixed asset portfolios by incorporating residential properties from two different districts while achieving higher risk-adjusted performance. This study concludes that there are diversification benefits by incorporating residential properties in a mixed asset portfolio in the Malaysian investment context.

Keywords: Malaysian residential properties, portfolio diversification, mean variance analysis

Introduction

Residential properties, be it investment or owner-occupied property, is recognised as an important component in overall wealth. However, the effect and contribution of residential properties to an investment portfolio is not explicitly acknowledged; hence the allocation to residential properties is not being systematically determined and managed. To be consistent with the Modern Portfolio Theory (Markowitz, 1952; 1959), residential properties should be included in a mixed asset portfolio.

Residential properties, as an asset class, should be evaluated in the light of how it interacts with other assets (i.e. shares and bonds) within the portfolio perspective and how it impacts the overall portfolio performance.

Aim and objectives

With increased significance of residential properties as an investment asset and the potential diversification benefits of Malaysian residential properties in a mixed asset portfolio, it is essential to assess the roles of Malaysian residential properties within investment portfolios. This paper aims to examine the benefits of incorporating Malaysian residential properties in a mixed asset portfolio.

The objectives of this study are:
(a) To investigate the effects and diversification benefits of incorporating residential properties in mixed asset portfolio
(b) To determine which property types and locations contribute more towards the improvement of the overall portfolio performance
(c) To determine the optimal allocations of residential properties in an investment portfolio

The findings of this study will present evidence of whether residential property is a worthwhile investment within a portfolio perspective. In addition, these findings will provide suggestions on the optimal asset allocations between residential property and financial assets, and the preferred house types and geographical locations, which could help in achieving better diversification benefits. These findings are vital for investors because of the indivisibility and large initial outlay of acquiring a residential property, causing them having difficulty to possess a truly diversified residential property portfolio. Subsequently, this research could serve as a guideline to investors to incorporate Malaysian residential properties in their investment portfolio with the ultimate aim to increase wealth with reduced risks.

Diversification benefits of residential properties in mixed asset portfolios

A comparable study conducted by Hartzell et al. (1986) use a capital appreciation return, based on an appraisal price index, to investigate the diversification benefits of US residential properties investment in a portfolio context for 1973 to 1983. Their findings confirm earlier evidence that housing assets offer attractive diversification opportunities for stock and bond portfolios along with considerable inflation hedging. Besides, they suggest that residential properties are weakly correlated with the non-residential properties (e.g. office, industrial, hotel, and, to a lesser extent, retail). Therefore, housing investment seems to provide a property diversification opportunity. In other words, housing investment could play a potential role of diversifier within portfolios of different property types. However diversification across property segments involves high cost and there is administrative burden of selecting and managing the investment.

According to Goetzmann and Ibbotson (1990), residential properties investment total returns outperformed long-term government bonds but underperformed the stock market, and that the volatility of housing investment are noticeably lower than the volatility of the share and long-term government bonds. However, they point out that for the individual homeowner, who does not have a well-diversified portfolio of residential properties, the risk is much higher. The risk of investment in an individual home over a year is closer to 12 per cent than the 3 per cent for a large portfolio of houses. Following these, they claim that returns on residential properties have strong negative correlation with the returns on long-term government bonds and on shares, and strong positive relationship with inflation. Additionally, they find that returns on residential properties are only slightly correlated with the returns on commercial properties. They report that, given the low correlation between residential properties and financial assets; residential properties are potential portfolio diversifier in optimal mixed asset portfolios, even if housing returns are expected to be relatively low and the volatility to be relatively high. Besides, they also state that substantial reductions in risk may be achieved by diversifying regionally in residential properties.

Hutchison (1994) investigates the performance of UK housing assets in short-to-medium holding periods, both in absolute terms and in comparison with financial assets (shares and government bonds) over the 1984-1992 sample periods. Hutchison (1994) demonstrate low levels of correlation between the return on housing and those on shares and government bonds. In contradiction to previous studies, the computed data

suggest that the returns adjusted for risk on housing investment underperformed those on both shares and government bonds during the sample period.

Hoesli and Hamelink (1997) investigate the residential property diversification benefits to mixed asset portfolios during the period between 1981-1992, in two Swiss housing markets (Geneva and Zurich). The study confirm earlier studies that housing assets are effective portfolio diversifiers for multi-asset portfolios even though the illiquidity of residential properties are accounted for (they use illiquidity premiums of 50, 100 and 150 basis points). Furthermore, they also find that an investor who holds residential properties in one Swiss housing market would also gain benefits from investing in another Swiss housing market when only the housing investment asset's class of the portfolio is considered.

Ting and Mohd (2004) examine the performance of Malaysian residential property sectors in comparison with financial assets (shares and fixed deposit) for the 1989 – 2001 period. The research focuses on risk-return, comparison of residential risk-adjusted performance with financial assets and identification of risk reduction benefits of residential properties through portfolio diversification. The authors demonstrate that detached houses provide higher capital appreciation compared to other forms of housing and these high returns are associated with high risks (higher variability in its return). In addition, Ting and Mohd (2004) also report that the best performing residential properties by geographical locations are in Kuala Lumpur, Penang and Johor (Malaysian states). Whilst 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 performed better than equities proxied by the Kuala Lumpur Composite Index (KLCI). The findings indicate that 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.

Further to Ting and Mohd's (2004) work, another comparable research is conducted by Tan and Ting (2004) to observe the effects and diversification benefits of incorporating Malaysian residential property in a personal investment portfolio, which consist of shares and bonds over the 1989 – 2001 periods. Tan and Ting (2004) find that an allocation portion of 50% to 65% of a total available fund to Malaysian residential property, mostly in terraced house, in any of the five main regions of Malaysia, and the remainder invested in bonds and shares will create a more superior personal investment

portfolio, both in terms of higher risk-adjusted return and extensive reduction in overall risks. These findings clearly demonstrate the significance of diversification gain when residential properties and financial assets are invested as a portfolio.

Research methodology

Data Variables

The return computation for Malaysian residential properties, in terms of quarterly capital returns, is base on the Malaysian House Price Index (MHPI) series. Due to the limitations of the MHPI, transaction costs and rental returns are not incorporated in the returns computation.

The closing quarterly values of the Kuala Lumpur Composite Index (KLCI) are used as a proxy for the performance of the Bursa Malaysia, representing Malaysian equity investment returns.

The closing quarterly values of the Kuala Lumpur Second Board Index (KLSBI) are used as a proxy for Malaysian small capital equity investment returns.

The closing quarterly values of the Kuala Lumpur Property Sector Index (KLPI) are used as a proxy for the performance of Malaysian property related equity investment returns, representing Malaysian indirect property investments.

The quarterly Malaysian Government Securities (MGS) Index (Jan 2000 – Sep 2006) are used as a proxy for Malaysian bond investment returns.

Data Sources

The Malaysian House Price Index (MHPI) is provided by the Valuation & Property Services Department of the Ministry of Finance, Malaysia. The MHPI is a transaction-based national house price index published by the National Property Information Centre (NAPIC) of the Valuation & Property Services Department. Capital values of residential properties are obtained from the latest MHPI publication covering the study period from Jan 2000 to Sep 2006 on a quarterly basis. The MHPI has more than two hundred sub-indexes comprising the national, state and district house price indexes. Among these two hundred sub-indexes, four house type sub-indexes, fourteen states sub-indexes and forty-one districts sub-indexes are available and are used in the analyses for this study. The house type sub-indexes are Terraced, Semi-detached, Detached and High-rise unit, and the fourteen states are Johor, Kuala Lumpur, Kedah, Kelantan, Melaka,

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Negeri Sembilan, Pahang, Penang, Perak, Perlis, Sabah, Sarawak, Selangor and Terengganu.

The quarterly values of the Kuala Lumpur Composite Index (KLCI), Kuala Lumpur Second Board Index (KLSBI), Kuala Lumpur Property Sector Index (KLPI) and quarterly Malaysian Government Securities (MGS) Index are obtained from Bloomberg website, a leading global provider of data, news and analytics.

Study Period

The study period is from Jan 2000 to Sep 2006, which covers six years and nine months. The beginning period for the year 2000 is chosen because the earliest period for the Malaysian House Price Index in quarterly series is available only from the year 2000 onwards. A total of twenty-seven quarterly data points are available for analyses.

Research findings

Table 1 shows that the returns of all investment options, except for Kuala Lumpur Property Index (KLPI), has normally distributions. To reduce the effect of the non-normality, the returns are log.

Table 1 : Normality tests on asset returns

	KLCI	KLSB	KLPI	MGS	MHPI
Skewness	-0.2792	0.2889	-0.0483	0.3325	0.9526
Kurtosis	-0.6525	-0.3178	-0.8735	0.0609	1.3793
Jarque-bera test	14.7902	12.2869	16.2643 *	9.8374	6.7781

Note: * denote statistically significant at 1% level of significance.

Performance analysis for various investment asset classes

Among the five investment assets, Malaysian Government Securities (MGS) have the highest average annual return and second highest risk-adjusted performance (see Table 2). Not surprisingly, shares investment, which are represented by KLCI (Kuala Lumpur Composite Index), KLSBI (Kuala Lumpur Second Board Index) and KLPI (Kuala Lumpur Property Index) are risky assets compared to other assets class for having high annual risk. Besides, their low and negative average annual returns do not commensurate with their high annual risks, which made them the least preferred investment options on the risk-return basis. The lacklustre performance of shares investment may be attributed to the relatively short study period (1st quarter 2000 – 3rd

quarter 2006). Moreover, the Malaysian property share market was adversely affected by the 1997 Asian financial crisis (Kallberg et al, 2002) and had significantly underperformed the Malaysian residential properties, bond and stock market over the study period.

For Malaysian residential properties (represented by MHPI), they have the second highest average annual return and best performance in terms of risk-adjusted return. In fact, the low standard deviation for MHPI is contributing significantly to the best risk-adjusted performance among other asset classes and subclasses. A risk-return diagram for the five investment assets are shown in Figure 1.

Performance analysis of residential properties by house types

In Table 3, among all the residential property types, terraced houses surpass all other residential property types by having the highest risk-adjusted performance, which is 1.198. In terms of average annual appreciation, Malaysian detached houses have the highest average annual return of 5.43%; while having second place in terms of risk-adjusted return, due to medium high standard deviation compared to other residential property types. The similar case applies to semi-detached houses. In view of that, they have higher average annual return than terraced houses, but poorer performance (in terms of risk-adjusted return) than terraced houses due to higher annual risk. Nevertheless, all these three asset subclasses mentioned are ranked top twenty in overall ranking. With a high annual risk compared to other housing types, Malaysian high-rise properties are poorest performing housing type in terms of risk-adjusted performance.

Performance analysis of residential properties by states

Table 4 shows the performance of the residential property sectors by states. As the Malaysian national capital, Kuala Lumpur ranked first in terms of risk-adjusted return, followed by Pahang and Negeri Sembilan. Besides, these state achieved top ten in overall ranking among all the assets (including subclasses). In effect, among all the Malaysian states, only Kuala Lumpur has an average annual return higher than annual risk. This result is expected as Kuala Lumpur is the most urbanised state in Malaysia and there is always high demand for its residential properties. Although Sabah, Terengganu, Perlis and Pahang have higher average annual returns compared to Kuala Lumpur, they have lower return per risk ratio due to higher volatility in returns. Johor is the only state which has negative average annual return and consequently is the worst performing state. In terms of risk-adjusted return, Johor ranked 118 out of a total

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number of 121 assets (including asset subclasses). The poor performance of Johor may be attributed to its residential property market which has not recovered fully from the Asian financial crisis since 1997.

Portfolio diversification benefits of Malaysian residential properties

Correlation analysis

All indexes employed in this study are based on quarterly basis. Table 5 presents the correlation coefficients between the various asset classes and subclasses. The components of housing returns are also considered.

By referring to Table 5, share investment options (KLCI, KLSB and KLPI) are highly correlated with one another, which are more than 70%. This implies that Malaysian indirect property investments (represented by KL Property index) do not provide significant portfolio diversification benefits in share portfolios. However, fixed income financial asset such as bond (Malaysian Government Securities) is negatively correlated with share investments (KLCI, KLSB and KLPI). These negative correlations allow particular fixed income financial asset to be a good candidate for portfolio diversifier in a mixed asset portfolio that contains shares.

In addition, it is notable that Malaysian residential properties are negatively correlated with the return of other financial assets, especially for bonds (-22.73%), which is represented by Malaysian Government Securities (MGS). These results suggest the existence of possible diversification benefits by including Malaysian residential properties to form a mixed asset portfolio. Selangor detached houses have the lowest correlation with share investments, which are lower than -40%. Moreover, Penang detached houses and Kelantan semi-detached houses have the lowest correlation with Malaysian Government Securities, which are lower than -48%. However, it should not be ignored that the results of negative correlation of residential properties could be partly due to the way the house price indexes are constructed.

Mixed asset portfolio performance (without residential properties)

In order to investigate the portfolio diversification benefits of Malaysian residential properties, portfolio of four financial assets (KLCI, KLSB, KLPI and MGS, without Malaysian residential properties) is analysed and studied, for the purpose of benchmarking and comparison in later part of this section. Figure 2 illustrates the

efficient frontier of four financial assets portfolio (without Malaysian residential properties).

The role of residential properties in mixed asset portfolio

The allocations for residential properties in mean-variance efficient portfolios range from 0% to 66.68%. The highest allocation for residential property is Malaysian all houses (66.68%), followed by Malaysian terraced houses (58.37%), Selangor terraced houses (43.75%), Kuala Lumpur all houses (40.45%), Selangor all houses (40.41%) and Malaysian detached houses (39.14%).

In terms of improvement on risk-adjusted performance and enhancement of portfolio diversification benefits, Table 6 demonstrates that an allocation portion of 66.68% of a total available fund to Malaysian all houses (comprising of 72.2% of terraced houses, 10.9% of high-rise houses, 5.7% of detached houses, 10.9% of semi-detached houses), and the remainder invested in bonds (30.11% of MGS) and shares (3.20% of KLCI) will create a more superior investment portfolio. In fact, risk-adjusted performance for mixed asset portfolio increase from 0.758 (investment portfolio of four financial assets without residential property) to 1.317 (investment portfolio of four financial assets with Malaysian all houses), which provide an improvement of 73.87%. Besides, there are other residential properties that contribute in risk-adjusted returns, namely Malaysian detached houses (improvement of 60.83% in risk-adjusted return), Malaysian terraced houses (46.17%), semi-detached houses in Kelantan state (42.20%), detached houses in Kedah state (39.69%), terraced houses in Tawau district of Sabah state (37.21%) etc. (refer Table 4.3.5).

A clear picture emerges from these findings is that over the last six years (Jan 2000 – Sep 2006), the portfolio diversification and improvements can be achieved by the inclusion of the Malaysian residential properties in mixed asset portfolios consisting of shares (including property related shares) and bonds. The key investment implication is that investment in the Malaysian mixed asset portfolios that include Malaysian residential properties are likely to generate positive portfolio diversification benefits.

Another significant finding of this study is that most of the optimal portfolios in Table 6 outperform the best performing asset, Malaysian residential properties (quarterly risk-adjusted performance 0.794), with some of the mixed asset portfolios outperforming by as much as 65.87% in terms of quarterly risk-adjusted return. Again, this finding supports the fact that when combining the residential property and financial assets, the diversification gain was substantial. Thus, holding a single asset class portfolio, be it

financial asset or residential property, not only induces unnecessary   non-systematic risk, but also resulted in sub-optimal investment performance. Figure 3 illustrates two efficient frontiers for portfolios of four financial assets with and without Malaysian residential properties.

Portfolio diversification benefits of two Malaysian residential properties in a mixed asset portfolio

This section analyses the potential of diversification benefits achieved by incorporating two residential properties in a mixed asset portfolio.

It is easier for investors to make investments at the district level then at the state level. Hence for the ease of understanding and applications, a benchmark portfolio is chosen from Table 6 comprising 14.68% of terraced houses in Tawau, Sabah state, 1.22% of KLCI, 0% of KLsbi, 0.73% of KLPI and 83.37% of MGS (mixed asset portfolio ranked sixth in Table 4.3.5). The benchmark portfolio allows comparison with other new portfolios to investigate the quantum of improvements on return per one unit of risk.

Table 7 presents mixed asset portfolios performance and is sorted according to return per risk ratio. The portfolio quarterly risks and returns are converted into annual figures to allow comparison with the results of past research studies.

Table 7 shows the results are not much different from previous section. On the basis of highest risk-adjusted returns on the efficient frontiers, asset allocations in most of the portfolios presented in both tables are again dominated by Malaysian Government Securities (MGS), which are ranging from 49.90% to 83.37%; followed by terraced houses in Tawau, Sabah state, which are ranging from 5.92% to 16.17%. In contrast, the allocations for equity investments and indirect property investment are not significant compared with bonds (MGS). Accordingly, the maximum allocation for Kuala Lumpur Composite Index (KLCI) is 5.85%; 0% for Kuala Lumpur Second Board Index (KLSBI); and 3.13% for indirect property investment (represented by KL Property Index).

The allocations for residential properties (excluding residential property in benchmark portfolio) in mean-variance efficient portfolios range from 0% to 37.56%. The highest allocation for additional residential property is Negeri Sembilan all houses (37.56%), followed by Selangor terraced houses (36.14%) and Perak all houses (35.55%). In terms of improvement on risk-adjusted performance and enhancement of portfolio

diversification benefits, Table 7 displays that an allocation portion of 35.55% of a total available fund to Perak all houses and 12.40% to terraced houses in Tawau, Sabah state; and the remainder invested in bonds (52.05% of MGS) will create a more superior investment portfolio. In fact, risk-adjusted performance for particular mixed asset portfolio increase from 1.040 (benchmark portfolio - portfolio of four financial assets and terraced houses in Tawau, Sabah state) to 1.438 (investment portfolio of four financial assets, terraced houses in Tawau, Sabah state and Perak all houses), which record an improvement of 38.32%. In addition, by comparing the best performing portfolio in Table 6 (investment portfolio of four financial assets with only one residential property class - Malaysian all houses, with quarterly portfolio risk-adjusted return 1.317), an improvement of 9.15% is achieved for risk-adjusted return. Furthermore, there are other residential properties which do contribute toward achieving higher risk-adjusted returns (compared to benchmark investment portfolio), namely semi-detached houses in Kelantan (improvement of 36.99% in risk-adjusted return), all houses in Pahang (36.92%), semi-detached houses in Pahang (30.27%), Malaysian detached houses (28.40%), terraced houses in Segamat, Johor state (27.59%). In fact, these six investment portfolios mentioned above achieve higher risk-adjusted performance, compared to the best performing portfolio in Table 6 (investment portfolio of four financial assets with only one residential property class - Malaysian all houses, with quarterly portfolio risk-adjusted return 1.317).

Taking the results as whole, there is a clear evidence that over the last six years (Jan 2000 – Sep 2006), the portfolio diversification and improvement of risk-adjusted returns benefits of additional Malaysian residential properties (adding one more residential property class) are present in existing Malaysian mixed asset portfolios, consisting of one residential property class (terraced house in Tawau, Sabah state in this study), Malaysian shares (including property related shares) and Malaysian bonds. The key investment implication is that investment in the Malaysian mixed asset portfolios that include additional Malaysian residential properties (adding one more residential property class to investment portfolio that already contains one residential property class) are likely to generate positive portfolio diversification benefits over the last six years. Another significant finding of this study is standard institutional investors with limited fund (size) are able to construct well diversified portfolios by incorporating residential properties from two different districts (by avoiding residential property classes at state level and national level), such as terraced houses from Tawau, Sabah state and Segamat, Johor state; instead of incorporating only one residential property class (such as Malaysian all houses) in their investment portfolio.

Conclusion

This study has focused on the diversification benefits of Malaysian residential properties in Malaysian mixed asset portfolios and has provided some interesting and important insights into the dynamics and performance of various Malaysian residential properties (by types and by geographical locations). The findings of this study demonstrate that ex-post efficient portfolios typically devote a significant proportion to some residential properties (for example: Malaysian all houses (66.68%), Malaysian terraced houses (58.37%), Selangor terraced houses (43.75%), Kuala Lumpur all houses (40.45%), Selangor all houses (40.41%), Malaysian detached houses (39.14%) etc.).

Malaysian all houses (comprise of 72.2% of terraced houses; 10.9% of high-rise houses, 5.7% of detached houses, 10.9% of semi-detached houses) are one of the best performing asset classes (in terms of risk-adjusted return) in the study period (Jan 2000 – Sep 2006), followed by Malaysian bonds (MGS). However, placing all funds in a single asset class has resulted in sub-optimal performance. The results illustrate that an allocation portion of 66.68% of a total available fund to Malaysian all houses, and the remainder invested in bonds (30.11% of MGS) and shares (3.20% of KLCI) will create a superior investment portfolio. In fact, risk-adjusted performance for particular mixed asset portfolio increase from 0.758 (investment portfolio of four financial assets without residential property) to 1.317 (investment portfolio of four financial assets with Malaysian all houses), which is recording an improvement of 73.87%.

Another significant finding of this study is that over the last six years (Jan 2000 – Sep 2006), there are portfolio diversification benefits and improvement of risk-adjusted returns by adding an additional Malaysian residential properties (adding one more residential property class) into a Malaysian mixed asset portfolio, that is consisting of one residential property class (terraced house in Tawau, Sabah state in this study), Malaysian shares (including property related shares) and Malaysian bonds. For instance, an allocation portion of 12.40% of a total available fund to terraced houses in Tawau, Sabah state and 26.88% to terraced houses in Segamat, Johor state, and the remainder invested in bonds (59.68% of MGS) and shares (1.05% of KLCI), a risk-adjusted return of 1.326 will be achieved (slightly higher than 1.317, the risk-adjusted return for mixed asset portfolio mentioned previously). The key investment implication is that investment in the Malaysian mixed asset portfolios that include additional Malaysian residential properties (adding one more residential property class to investment portfolio that already contains one residential property class) are likely to generate positive portfolio diversification benefits over the last six years (six years and nine months).

A better performance can be achieved for a mixed asset portfolios by incorporating residential properties from two different districts (by avoiding residential property classes at state level and national level), such as terraced houses from Tawau, Sabah state and Segamat, Johor state; instead of incorporating only one residential property class (such as Malaysian all houses) in their investment portfolio.

In fact, the findings confirm that the fund size requirement will be reduced significantly for building an investment portfolio that contains four financial assets and terraced houses from two districts (Tawau, Sabah state and Segamat, Johor state in this case), while achieving higher risk-adjusted performance (compared to investment portfolio that contains four financial assets and Malaysian all houses).

Other than direct residential property investments, this study also finds that Malaysian indirect property investments have failed to contribute to mixed asset portfolios of Malaysian shares, bonds and direct residential properties in terms of improving   risk-adjusted performance and enhancing portfolio diversification benefits over the study period. This was mainly due to Malaysian indirect property investments' inferior investment performance affected by the 1997 Asian economic crisis (Kallberg et al, 2002).

Overall, the findings of this study demonstrate the importance of incorporating residential properties into an investment portfolio. Therefore investors should systematically allocate their resources into various asset classes at methodically (i.e. optimally) determined proportion to achieve a well-diversified portfolio.

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Figure 1 : Risk-return diagram for various asset classes
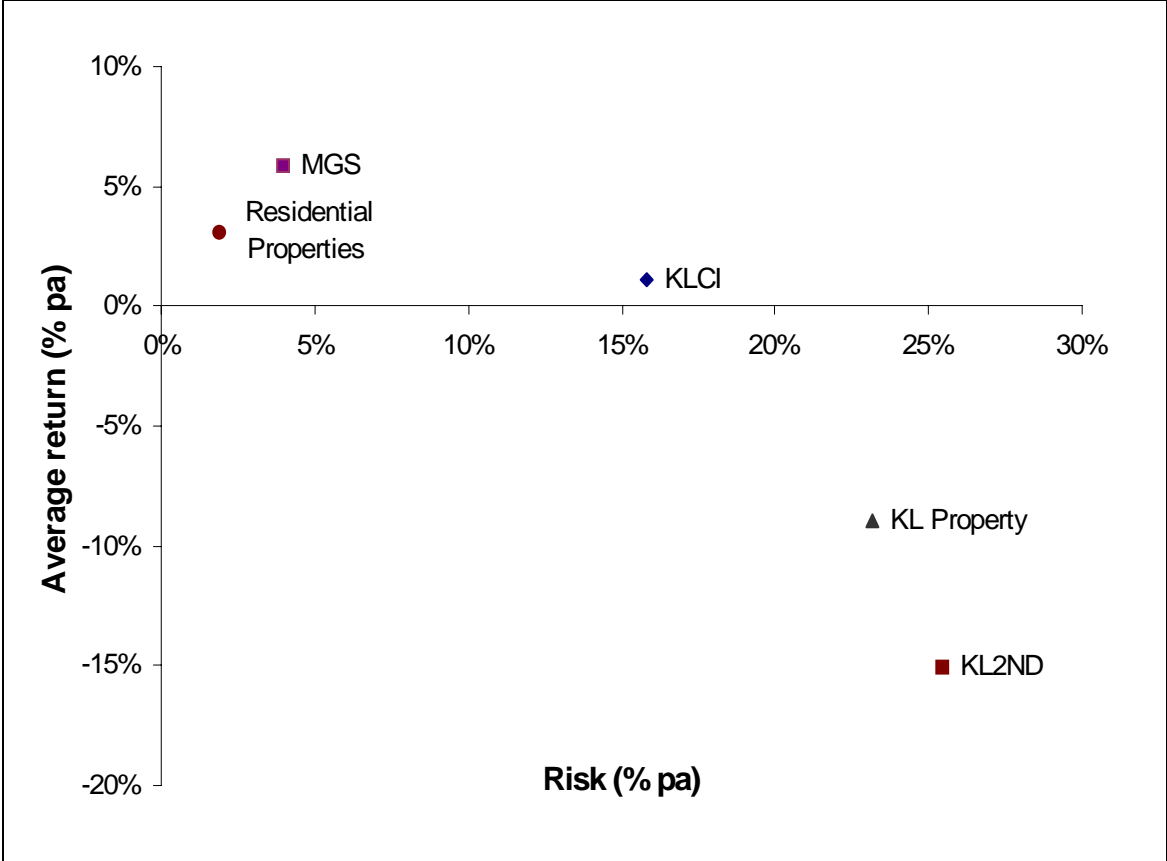
Figure 2: Efficient frontier for portfolio of four financial assets without Malaysian Residential properties
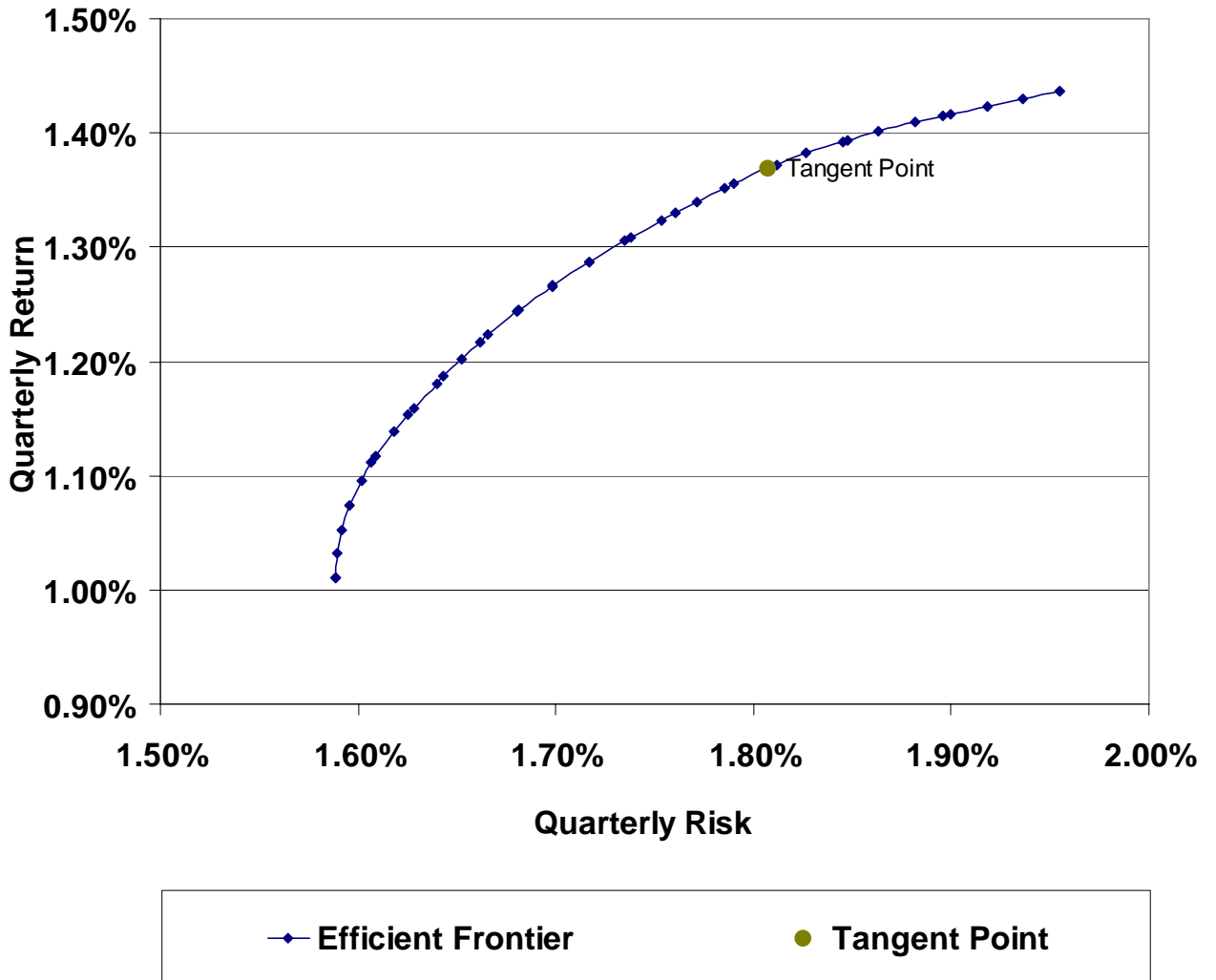
Figure 3: Two efficient frontiers for portfolios of four financial assets with and without Malaysian residential properties
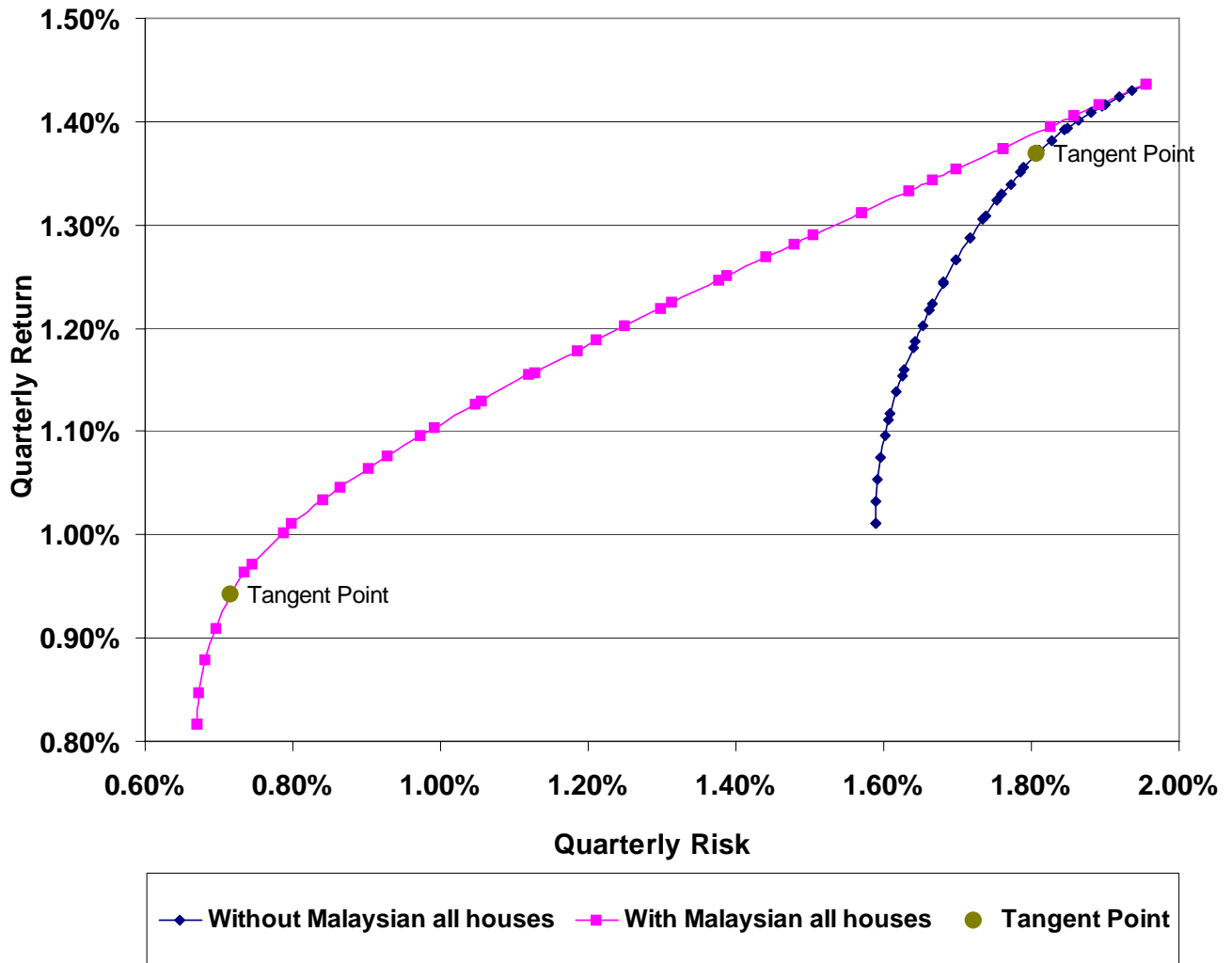
Table 1 Normality tests on asset returns

Asset classes	KLCI	KLSB	KLPI	MGS	Malaysia Residential Properties
Skewness	-0.2792	0.2889	-0.0483	-0.3325	0.9526
Value of standard errors of skewness x 2	0.9608	0.9608	0.9608	0.9608	0.9608
Kurtosis	-0.6525	-0.3178	-0.8735	0.0609	1.3793
Value of standard errors of kurtosis x 2	1.9215	1.9215	1.9215	1.9215	1.9215
Jarque-Bera Test statistic*	14.7902	12.2869	16.2643	9.8374	6.7781
Is Jarque-Bera Test statistic lesser than 15.3791?	Yes	Yes	No	Yes	Yes

*At 95% confidence level, the critical chi-square value (n=26) is 15.3791

Table 2: Risk-return analysis of various asset classes (1st quarter 2000 – 3rd quarter 2006)

Asset classes	Average annual return	Annual risk	Return per one unit of risk	Ranking	Overall ranking
KLCI	1.11%	15.79%	0.071	3	108
KLSB	-15.03%	25.43%	-0.591	5	121
KLPI	-8.91%	23.16%	-0.385	4	120
MGS	5.87%	3.99%	1.472	2	2
MHPI	3.04%	1.89%	1.606	1	1

Table 3: Risk-return analysis of residential properties by house types in Malaysia (1st quarter 2000 – 3rd quarter 2006)

House type	Average annual return	Annual risk	Return per one unit of risk	Ranking	Overall ranking
Terraced	2.72%	2.27%	1.198	1	3
Detached	5.43%	4.95%	1.097	2	6
Semi-detached	3.49%	4.30%	0.811	3	17
High-rise	2.58%	7.69%	0.335	4	88

Table 4: Risk-return analysis of residential properties by states of Malaysia (1st quarter 2000 – 3rd quarter 2006)

Malaysian state	Average annual return	Annual risk	Return per one unit of risk	Ranking in this table	Overall ranking
Kuala Lumpur (KL)	4.78%	4.24%	1.128	1	4
Selangor (Sel)	2.53%	3.16%	0.801	6	19
Johor (Joh)	-1.17%	6.50%	-0.179	14	117
Pulau Pinang (Pen)	3.41%	5.83%	0.585	12	46
Negeri Sembilan (Sem)	3.00%	3.26%	0.918	3	10
Perak (Per)	4.40%	4.81%	0.915	4	11
Melaka (Mel)	3.86%	6.42%	0.601	11	42
Kedah (Ked)	4.48%	6.83%	0.657	9	30
Pahang (Pah)	6.23%	6.65%	0.937	2	9
Terengganu (Ter)	6.43%	9.75%	0.660	7	27
Kelantan (Kel)	3.21%	8.52%	0.377	13	77
Perlis (Pel)	6.24%	10.32%	0.605	10	40
Sabah (Sab)	6.92%	8.09%	0.855	5	16
Sarawak (Sar)	4.60%	7.00%	0.657	8	29

Table 5: Correlation coefficients between various asset classes and subclasses returns

	KLCI	KLSBI	KLPI	MGS	MHPI
Kuala Lumpur Composite Index (KLCI)	1.0000	0.7304	0.7634	-0.1980	-0.1810
Kuala Lumpur Second Board Index (KLSB)	0.7304	1.0000	0.8570	-0.4609	-0.1044
Kuala Lumpur Property Index (KLPI)	0.7634	0.8570	1.0000	-0.4328	-0.0360
Malaysian Government Securities All Index (MGS)	-0.1980	-0.4609	-0.4328	1.0000	-0.2273
Malaysian All Houses	-0.1810	-0.1044	-0.0360	-0.2273	1.0000
Malaysian Terraced	-0.0009	-0.0784	0.1191	-0.2314	0.7510
Malaysian High-rise	-0.2119	-0.0141	-0.1597	0.1668	0.1349
Malaysian Detached	-0.3264	-0.2020	-0.2061	-0.2864	0.4859
Malaysian Semi-detached	-0.0792	0.0297	-0.0283	-0.1426	0.6708
Kuala Lumpur (KL) All Houses	0.0765	-0.0196	0.2621	-0.0706	0.2252
Kuala Lumpur (KL) Terraced	0.0564	0.0766	0.2332	-0.1290	0.2154
	KLCI	KL2ND	KL Property	MGS	Malaysian All Houses
Kuala Lumpur (KL) High-rise	0.2808	0.1461	0.2941	-0.2783	-0.1476
Kuala Lumpur (KL) Detached	-0.0799	-0.0555	0.1281	0.0272	0.1287
Kuala Lumpur (KL) Semi-detached	0.0446	-0.1668	-0.2371	0.2316	0.2581
KL - Terraced –Kuala Lumpur Central	0.1479	0.1373	0.2241	-0.1352	0.2582
KL - Terraced –Kuala Lumpur North	-0.1074	-0.0380	0.0106	0.0018	-0.1529
KL - Terraced –Kuala	-0.1910	-0.1714	0.0497	0.0154	0.1328

	KLCI	KLSB	KLPI	MGS	Malaysian All Houses
Lumpur South					
KL - High-rise –Kuala Lumpur Central	0.2773	0.1537	0.2863	-0.1980	-0.0808
KL - High-rise –Kuala Lumpur North	-0.0920	0.0514	-0.0327	-0.1693	-0.1789
KL - High-rise –Kuala Lumpur South	0.2260	-0.1643	0.0732	-0.0573	0.0403
Selangor (Sel) All Houses	-0.3770	-0.2061	-0.2338	0.1122	0.5356
Selangor (Sel) Terraced	-0.2669	-0.2112	-0.1593	-0.0156	0.5078
Selangor (Sel) High-rise	0.0024	0.2030	0.1476	0.1322	0.1503
Selangor (Sel) Detached	-0.4864	-0.4138	-0.4630	0.2737	0.0441
Selangor (Sel) Semi-detached	-0.1384	0.0306	-0.0574	0.0390	0.2628
Sel - Terraced – Petaling	-0.2845	-0.2406	-0.1370	-0.0456	0.5737
Sel - Terraced – Kelang	-0.0576	-0.0594	-0.0799	0.1553	0.0262
Sel - Terraced – Gombak	-0.0960	-0.0045	-0.1004	-0.0808	0.1018
Sel - Terraced - Hulu Langat	0.0864	0.1797	0.1329	-0.0093	0.0793
Sel - High-rise – Petaling	0.0500	0.1970	0.1516	0.1345	0.1476
Sel - High-rise - Hulu Langat	-0.1820	0.1073	0.0474	0.0296	0.0427
Johor (Joh) All Houses	-0.0600	0.0360	-0.0468	-0.2584	0.6391
Johor (Joh) Terraced	-0.0910	0.0541	0.0141	-0.3133	0.5605
Johor (Joh) High-rise	-0.0103	0.1073	0.0722	0.2761	0.2471
Johor (Joh) Detached	-0.0132	-0.0300	-0.2143	0.2559	0.0739
Johor (Joh) Semi-detached	0.0430	-0.0332	-0.0784	-0.0797	0.2539
Joh - Terraced - Johor Bahru / Kota Tinggi / Pontian	-0.0741	0.0315	-0.0012	-0.2802	0.5436
Joh - Terraced - Batu Pahat	-0.1929	-0.0175	0.0340	0.0087	0.4515
Joh - Terraced – Muar	-0.2716	-0.0791	-0.2378	-0.1242	0.4500
Joh - Terraced – Keluang	-0.1407	0.0624	-0.0564	-0.1162	-0.1322
Joh - Terraced – Segamat	-0.0070	-0.0281	0.1037	-0.1863	0.2930
Pulau Pinang (Pen) All Houses	-0.3720	-0.1303	-0.2885	-0.1088	0.2435
Pulau Pinang (Pen) Terraced	0.1174	0.0926	0.0800	-0.3933	0.1362
Pulau Pinang (Pen) High-rise	-0.2974	-0.1148	-0.2648	0.1725	0.1219
Pulau Pinang (Pen) Detached	-0.0879	-0.0493	-0.0478	-0.4809	-0.0032
Pulau Pinang (Pen) Semi-detached	-0.1978	-0.1289	0.0590	-0.2612	0.0717
Pen - Terraced – Penang Island	0.0987	0.1591	0.1090	-0.4052	0.0951
	KLCI	KLSB	KLPI	MGS	Malaysian All Houses
Pen - Terraced - Seberang Perai	0.0927	-0.0764	-0.0038	-0.0903	0.1144
Pen - High-rise - Penang Island	-0.2961	-0.1142	-0.2626	0.1721	0.1326
Pen - High-rise - Seberang Perai	-0.1217	-0.0672	-0.0921	-0.0610	-0.3063
Negeri Sembilan (Sem) All Houses	-0.0583	-0.1756	-0.0033	0.1403	0.0984
Negeri Sembilan (Sem) Terraced	-0.0572	-0.1535	0.0051	0.2553	-0.0062
Negeri Sembilan (Sem) High-rise	0.0703	0.0277	0.2188	-0.0625	0.3147
Negeri Sembilan (Sem)	-0.1568	-0.1373	-0.2009	-0.1417	0.0062

Detached					
Negeri Sembilan (Sem) Semi-detached	0.0337	0.0295	0.0348	-0.0770	0.1127
Sem - Terraced – Seremban	-0.1762	-0.2283	-0.0492	-0.2180	0.0604
Sem - Terraced – Port Dickson	0.0776	-0.0037	0.0284	0.3218	0.0090
Sem - Terraced - Tampin & Others	0.0091	0.0296	0.0483	0.3284	-0.1298
Perak (Per) All Houses	0.0812	-0.0726	0.1268	-0.1096	0.1655
Perak (Per) Terraced	0.1774	-0.0717	0.1699	0.0046	0.1701
Perak (Per) Detached	0.0540	0.1340	0.0202	-0.2975	-0.1044
Perak (Per) Semi-detached	-0.3229	-0.1496	-0.1001	-0.0005	0.1910
Per - Terraced – Kinta	0.1178	-0.1858	0.0649	0.0791	0.2075
Per - Terraced – Manjung	0.0813	0.2109	0.1066	-0.1179	-0.0595
Per - Terraced – Batang Padang	0.2744	0.0720	0.2603	-0.1787	0.1234
Per - Terraced - Hilir Perak	0.2273	0.3252	0.3571	-0.2519	0.2464
Per - Terraced – Kuala Kangsar	-0.3246	-0.1110	-0.1521	-0.0014	0.1674
Melaka (Mel) All Houses	-0.0417	-0.2119	-0.0266	0.3322	0.0541
Melaka (Mel) Terraced	-0.0752	-0.2496	-0.0394	0.2762	-0.0373
Melaka (Mel) High-rise	0.2208	0.3003	0.1646	0.0278	0.0475
Melaka (Mel) Detached	-0.1079	-0.0169	-0.0933	0.1234	0.0466
Melaka (Mel) Semi-detached	0.1468	0.0024	0.1114	0.2687	0.3142
Mel - Terraced – Melaka Tengah	-0.1288	-0.2878	-0.0723	0.2013	-0.0478
Mel - Terraced - Alor Gajah-Jasin	0.2089	0.1194	0.1180	0.3573	0.0672
Kedah (Ked) All Houses	0.2174	0.0432	0.3175	-0.0301	0.4996
Kedah (Ked) Terraced	0.1777	-0.0102	0.2523	0.0972	0.3789
Kedah (Ked) Detached	-0.2975	-0.0020	-0.0129	-0.4158	0.3106
Kedah (Ked) Semi-detached	0.2542	0.1980	0.3262	-0.1305	0.0950
Ked - Terraced - Kota Setar	0.1747	0.0076	0.0932	0.0591	0.1770
Ked - Terraced - Kuala Muda	0.0955	-0.0765	0.1901	0.1142	0.4197
Ked - Terraced - Kubang Pasu	-0.0463	0.1540	0.0981	0.0605	0.1472
	KLCI	KLSB	KLPI	MGS	Malaysian All Houses
Ked - Terraced – Kulim	0.2581	0.0902	0.2538	0.0652	-0.0466
Ked - Semi-detached - Kota Setar	0.1915	0.1678	0.2547	-0.2195	0.5096
Ked - Semi-detached - Kuala Muda	0.3517	0.0855	0.3048	-0.0919	0.4064
Ked - Semi-detached - Kulim	-0.0054	-0.0064	0.1155	0.0004	0.2490
Pahang (Pah) All Houses	0.3637	0.3676	0.5357	-0.2890	0.3546
Pahang (Pah) Terraced	0.2754	0.1507	0.3633	-0.1188	0.1233
Pahang (Pah) Detached	0.1785	0.3600	0.3849	-0.2737	0.4012
Pahang (Pah) Semi-detached	0.1923	0.1007	0.2086	-0.2058	0.0380
Pah - Terraced – Kuantan	0.3730	0.1489	0.3947	-0.0138	-0.0298
Pah - Terraced – Temerloh	-0.1475	-0.0942	0.0483	-0.1109	-0.0872
Pah - Terraced - Bentong Lipis-Raub	0.0826	0.2061	0.1082	-0.3052	0.1125

Pah - Terraced – Jerantut	-0.0342	-0.0464	-0.0456	0.0607	0.4240
Terengganu (Ter) All Houses	0.0958	0.0987	0.0779	-0.2714	0.4089
Terengganu (Ter) Terraced	0.0574	0.0528	-0.0879	0.0009	0.0050
Terengganu (Ter) Detached	0.1056	-0.0116	0.0619	-0.1814	0.5163
Terengganu (Ter) Semi-detached	-0.0359	0.0462	0.0580	-0.2715	0.2682
Ter - Terraced – Kuala Terengganu	0.1559	-0.0661	-0.0107	0.0771	0.0503
Ter - Terraced – Kemaman	0.3033	0.2579	0.2664	-0.0054	0.0155
Kelantan (Kel) All Houses	0.2326	0.1639	0.2100	0.0372	0.0689
Kelantan (Kel) Terraced	0.1359	0.1227	0.1083	-0.0440	-0.0232
Kelantan (Kel) Detached	0.1018	-0.1868	-0.0770	0.0605	0.2631
Kelantan (Kel) Semi-detached	-0.1944	-0.0463	-0.0411	-0.4952	0.2489
Perlis (Per) All Houses	0.4246	0.3607	0.5704	-0.2663	0.0217
Perlis (Per) Terraced	0.4755	0.3841	0.2548	0.0935	-0.3883
Perlis (Per) Semi-detached	-0.0821	0.0733	0.0854	0.0251	-0.1415
Sabah (Sab) All Houses	0.3199	0.2218	0.1228	-0.1024	-0.0874
Sabah (Sab) Terraced	0.2477	0.2474	0.1967	0.0557	0.0085
Sabah (Sab) High-rise	0.1015	-0.0200	-0.1220	0.0700	0.2182
Sabah (Sab) Detached	0.1844	-0.0363	-0.0523	-0.1924	-0.1966
Sabah (Sab) Semi-detached	0.0567	0.1064	0.0609	-0.0878	0.0905
Sab - Terraced – Kota	0.1592	0.0860	0.1027	0.2448	0.0504
Sab - Terraced – Sandakan	0.1630	0.0011	0.0818	0.0876	-0.0326
Sab - Terraced – Tawau	0.1850	0.3881	0.2023	-0.3819	-0.0716
Sarawak (Sar) All Houses	-0.0983	-0.0785	-0.2233	-0.1997	0.4378
Sarawak (Sar) Terraced	0.0670	-0.2269	-0.2405	-0.1012	0.3107
Sarawak (Sar) Detached	-0.2446	-0.1009	-0.2067	-0.1331	0.4708
Sarawak (Sar) Semi-detached	-0.0645	0.1437	-0.0510	-0.1934	0.2280
Sar - Terraced – Kuching	0.0401	-0.1967	-0.2110	-0.1675	0.3333
Sar - Terraced – Miri	0.0168	-0.1214	-0.1328	-0.0370	0.2130
Sar - Terraced – Sibu	0.0885	-0.1138	-0.1224	0.1255	0.0158

Table 6: Mixed asset portfolio performance – financial assets and residential properties (sorted by return per risk ratio)

4 Financial assets with	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Without residential property (benchmark)	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	118	5.5890%	3.6136%	1.5467
Malaysian All Houses	66.6822%	0.9423%	0.7154%	1.3173	73.8719%	1	3.8230%	1.4307%	2.6721
Malaysian Detached	39.1369%	1.2829%	1.0529%	1.2185	60.8270%	2	5.2314%	2.1058%	2.4843
Malaysian Terraced	58.3676%	0.9440%	0.8525%	1.1074	46.1672%	3	3.8299%	1.7049%	2.2464
Kelantan (Kel) Semi-detached	16.1967%	1.3159%	1.2215%	1.0773	42.1974%	4	5.3685%	2.4429%	2.1976
Kedah (Ked) Detached	11.2855%	1.4355%	1.3564%	1.0583	39.6911%	5	5.8668%	2.7127%	2.1627
Sab - Terraced - Tawau	14.6760%	1.6498%	1.5871%	1.0395	37.2090%	6	6.7644%	3.1741%	2.1311
Pahang (Pah) All Houses	31.8972%	1.4637%	1.4331%	1.0214	34.8154%	7	5.9847%	2.8661%	2.0881
Pulau Pinang (Pen) Terraced	27.6899%	1.2509%	1.2301%	1.0169	34.2200%	8	5.0981%	2.4602%	2.0723
Pahang (Pah) Terraced	39.0216%	1.4008%	1.4268%	0.9817	29.5803%	9	5.7220%	2.8537%	2.0051
Pen - Terraced - Penang Island	16.9850%	1.3685%	1.4069%	0.9727	28.3921%	10	5.5875%	2.8138%	1.9858
Kuala Lumpur (KL) All Houses	40.4498%	1.2997%	1.3382%	0.9713	28.1980%	11	5.3011%	2.6763%	1.9807
Sem - Terraced - Seremban	36.2000%	1.1086%	1.1594%	0.9562	26.2029%	12	4.5087%	2.3189%	1.9443
Sarawak (Sar) All Houses	24.4057%	1.1978%	1.2787%	0.9367	23.6406%	13	4.8781%	2.5575%	1.9074
Kuala Lumpur (KL) Terraced	30.5826%	1.3390%	1.4348%	0.9332	23.1790%	14	5.4644%	2.8695%	1.9043
Terengganu (Ter) All Houses	19.0856%	1.3943%	1.4961%	0.9320	23.0164%	15	5.6951%	2.9921%	1.9034
Malaysian Semi-detached	35.5766%	1.1806%	1.2670%	0.9317	22.9798%	16	4.8065%	2.5341%	1.8967
KL - Terraced -Kuala Lumpur	29.9423%	1.3980%	1.5044%	0.9292	22.6486%	17	5.7102%	3.0089%	1.8978

North									
Perak (Per) All Houses	33.9821%	1.2813%	1.3838%	0.9260	22.2183%	18	5.2246%	2.7675%	1.8878
Per - Terraced - Manjung	23.3958%	1.4664%	1.5907%	0.9218	21.6708%	19	5.9958%	3.1815%	1.8846
Selangor (Sel) Terraced	43.7491%	1.0387%	1.1284%	0.9205	21.4992%	20	4.2200%	2.2568%	1.8699
4 Financial assets with	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Without residential property (benchmark)	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	118	5.5890%	3.6136%	1.5467
Pulau Pinang (Pen) Detached	7.2366%	1.2342%	1.3530%	0.9122	20.4073%	21	5.0291%	2.7060%	1.8585
Pahang (Pah) Semi-detached	16.3519%	1.5271%	1.6746%	0.9119	20.3655%	22	6.2498%	3.3492%	1.8661
Pulau Pinang (Pen) All Houses	27.2900%	1.1682%	1.2911%	0.9048	19.4286%	23	4.7553%	2.5821%	1.8416
Sel - Terraced - Petaling	31.0081%	1.1955%	1.3289%	0.8996	18.7425%	24	4.8686%	2.6578%	1.8318
Perlis (Per) All Houses	19.0738%	1.4532%	1.6189%	0.8976	18.4782%	25	5.9406%	3.2378%	1.8348
KL - Terraced -Kuala Lumpur South	28.8985%	1.3009%	1.4543%	0.8946	18.0737%	26	5.3061%	2.9085%	1.8243
Sabah (Sab) All Houses	22.5833%	1.4376%	1.6073%	0.8944	18.0541%	27	5.8757%	3.2147%	1.8278
Perak (Per) Detached	8.4455%	1.4220%	1.5907%	0.8939	17.9888%	28	5.8105%	3.1815%	1.8263
Ked - Semi-detached - Kota Setar	16.0399%	1.4641%	1.6402%	0.8926	17.8167%	29	5.9862%	3.2804%	1.8248
Pah - Terraced - Kuantan	29.1062%	1.4880%	1.6674%	0.8924	17.7869%	30	6.0862%	3.3349%	1.8250
Sar - Terraced - Kuching	14.6993%	1.2885%	1.4563%	0.8848	16.7864%	31	5.2545%	2.9125%	1.8041
Joh - Terraced - Segamat	25.3714%	1.2436%	1.4078%	0.8834	16.5987%	32	5.0681%	2.8156%	1.8000
Terengganu (Ter) Semi-detached	9.5535%	1.4042%	1.6061%	0.8743	15.3961%	33	5.7360%	3.2121%	1.7857

	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Sarawak (Sar) Terraced	19.4724%	1.2287%	1.4133%	0.8694	14.7529%	34	5.0061%	2.8265%	1.7711
Selangor (Sel) All Houses	40.4100%	1.0356%	1.1953%	0.8664	14.3532%	35	4.2071%	2.3906%	1.7599
Sarawak (Sar) Detached	9.0238%	1.3959%	1.6163%	0.8636	13.9913%	36	5.7016%	3.2326%	1.7638
Pah - Terraced - Bentong Lipis-Raub	10.5464%	1.3658%	1.5853%	0.8615	13.7155%	37	5.5761%	3.1705%	1.7587
Sarawak (Sar) Semi-detached	19.3947%	1.2530%	1.4546%	0.8614	13.6915%	38	5.1069%	2.9093%	1.7554
Per - Terraced - Batang Padang	15.8219%	1.4240%	1.6627%	0.8564	13.0408%	39	5.8187%	3.3254%	1.7498
4 Financial assets with	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Without residential property (benchmark)	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	118	5.5890%	3.6136%	1.5467
Per - Terraced - Kuala Kangsar	16.3955%	1.3487%	1.5791%	0.8541	12.7329%	40	5.5051%	3.1583%	1.7431
Sabah (Sab) Detached	4.0898%	1.4294%	1.6867%	0.8475	11.8563%	41	5.8413%	3.3734%	1.7316
Negeri Sembilan (Sem) Detached	12.8450%	1.2882%	1.5255%	0.8444	11.4583%	42	5.2532%	3.0510%	1.7218
Ked - Semi-detached - Kulim	20.1124%	1.3553%	1.6061%	0.8438	11.3773%	43	5.5322%	3.2122%	1.7223
Negeri Sembilan (Sem) All Houses	37.1420%	1.1301%	1.3406%	0.8430	11.2656%	44	4.5978%	2.6813%	1.7148
Pahang (Pah) Detached	4.2010%	1.4677%	1.7455%	0.8408	10.9835%	45	6.0013%	3.4910%	1.7191
Kuala Lumpur (KL) High-rise	21.7779%	1.2181%	1.4491%	0.8406	10.9530%	46	4.9621%	2.8981%	1.7122
Joh - Terraced - Muar	18.9898%	1.1916%	1.4183%	0.8402	10.8988%	47	4.8524%	2.8365%	1.7107
Per - Terraced - Hilir Perak	12.9175%	1.3584%	1.6173%	0.8399	10.8581%	48	5.5452%	3.2346%	1.7143
Joh - Terraced - Batu Pahat	26.3866%	1.1842%	1.4169%	0.8358	10.3163%	49	4.8218%	2.8338%	1.7015
Pah - Terraced - Temerloh	13.6382%	1.3103%	1.5810%	0.8288	9.3969%	50	5.3453%	3.1619%	1.6905

	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Kedah (Ked) Semi-detached	12.6210%	1.4122%	1.7071%	0.8273	9.1923%	51	5.7698%	3.4142%	1.6899
Perak (Per) Terraced	23.1290%	1.2991%	1.5719%	0.8265	9.0846%	52	5.2986%	3.1438%	1.6854
Joh - Terraced - Keluang	15.6288%	1.2687%	1.5387%	0.8246	8.8328%	53	5.1723%	3.0774%	1.6808
Perak (Per) Semi-detached	14.8823%	1.2925%	1.5710%	0.8227	8.5903%	54	5.2712%	3.1421%	1.6776
Kedah (Ked) All Houses	19.3427%	1.3371%	1.6263%	0.8222	8.5219%	55	5.4568%	3.2526%	1.6777
Perlis (Per) Semi-detached	10.9850%	1.4280%	1.7373%	0.8219	8.4883%	56	5.8355%	3.4747%	1.6794
Pen - Terraced - Seberang Perai	19.4381%	1.2454%	1.5164%	0.8212	8.3961%	57	5.0753%	3.0329%	1.6734
Sabah (Sab) Terraced	14.0640%	1.4847%	1.8094%	0.8205	8.3013%	58	6.0723%	3.6189%	1.6780
4 Financial assets with	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Without residential property (benchmark)	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	118	5.5890%	3.6136%	1.5467
Ked - Semi-detached - Kuala Muda	14.0706%	1.4032%	1.7179%	0.8168	7.8091%	59	5.7319%	3.4358%	1.6683
Terengganu (Ter) Detached	5.3807%	1.4120%	1.7304%	0.8160	7.7022%	60	5.7688%	3.4609%	1.6669
Kuala Lumpur (KL) Detached	9.6640%	1.4231%	1.7485%	0.8139	7.4299%	61	5.8152%	3.4970%	1.6629
Pulau Pinang (Pen) Semi-detached	11.5961%	1.2140%	1.4955%	0.8118	7.1515%	62	4.9453%	2.9909%	1.6534
Negeri Sembilan (Sem) Semi-detached	11.3636%	1.3584%	1.6743%	0.8113	7.0842%	63	5.5451%	3.3486%	1.6560
Terengganu (Ter) Terraced	10.9603%	1.3701%	1.6925%	0.8095	6.8488%	64	5.5941%	3.3850%	1.6526
KL - High-rise -Kuala Lumpur	11.8542%	1.3322%	1.6478%	0.8084	6.7046%	65	5.4360%	3.2957%	1.6495

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Central									
Sel - Terraced - Kelang	27.0739%	1.1954%	1.4790%	0.8083	6.6813%	66	4.8682%	2.9581%	1.6457
Sabah (Sab) Semi-detached	9.4633%	1.3581%	1.6936%	0.8019	5.8466%	67	5.5443%	3.3872%	1.6368
KL - Terraced -Kuala Lumpur Central	8.4938%	1.3676%	1.7059%	0.8017	5.8139%	68	5.5837%	3.4119%	1.6366
Pen - High-rise - Seberang Perai	9.9982%	1.3188%	1.6508%	0.7989	5.4461%	69	5.3807%	3.3017%	1.6297
Ked - Terraced - Kota Setar	12.3395%	1.3977%	1.7502%	0.7986	5.4094%	70	5.7092%	3.5004%	1.6310
Kelantan (Kel) Terraced	12.9875%	1.3276%	1.6638%	0.7979	5.3188%	71	5.4170%	3.3276%	1.6279
Sel - Terraced - Gombak	10.7095%	1.2929%	1.6269%	0.7947	4.8930%	72	5.2727%	3.2537%	1.6205
Sabah (Sab) High-rise	3.7645%	1.4227%	1.8135%	0.7845	3.5460%	73	5.8134%	3.6270%	1.6028
Ter - Terraced - Kemaman	7.0269%	1.4141%	1.8030%	0.7843	3.5220%	74	5.7775%	3.6059%	1.6022
KL - High-rise -Kuala Lumpur North	6.5749%	1.2856%	1.6504%	0.7789	2.8118%	75	5.2423%	3.3008%	1.5882
4 Financial assets with	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Without residential property (benchmark)	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	118	5.5890%	3.6136%	1.5467
Ter - Terraced - Kuala Terengganu	6.3928%	1.3934%	1.7906%	0.7782	2.7104%	76	5.6912%	3.5813%	1.5892
Mel - Terraced - Melaka Tengah	9.9121%	1.3468%	1.7317%	0.7778	2.6554%	77	5.4971%	3.4634%	1.5872
Sel - Terraced - Hulu Langat	14.0990%	1.2453%	1.6024%	0.7772	2.5789%	78	5.0752%	3.2048%	1.5836
Per - Terraced - Kinta	9.3868%	1.3280%	1.7174%	0.7733	2.0617%	79	5.4188%	3.4349%	1.5776
Sar - Terraced - Miri	6.4929%	1.3069%	1.6924%	0.7722	1.9216%	80	5.3309%	3.3849%	1.5749

	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Ked - Terraced - Kulim	6.2486%	1.3776%	1.7866%	0.7711	1.7744%	81	5.6253%	3.5732%	1.5743
Negeri Sembilan (Sem) Terraced	15.3276%	1.2565%	1.6301%	0.7708	1.7398%	82	5.1215%	3.2602%	1.5709
Selangor (Sel) Semi-detached	3.7868%	1.3578%	1.7616%	0.7708	1.7317%	83	5.5427%	3.5232%	1.5732
Johor (Joh) Terraced	8.5697%	1.2094%	1.5706%	0.7700	1.6366%	84	4.9260%	3.1412%	1.5682
Pah - Terraced - Jerantut	5.3469%	1.3477%	1.7514%	0.7695	1.5634%	85	5.5007%	3.5028%	1.5703
Kedah (Ked) Terraced	7.4585%	1.3426%	1.7478%	0.7682	1.3887%	86	5.4794%	3.4956%	1.5675
Johor (Joh) Semi-detached	2.8642%	1.3470%	1.7536%	0.7681	1.3851%	87	5.4979%	3.5073%	1.5676
Johor (Joh) All Houses	8.4424%	1.2268%	1.5980%	0.7677	1.3314%	88	4.9983%	3.1960%	1.5639
Kelantan (Kel) All Houses	6.7977%	1.3389%	1.7451%	0.7672	1.2672%	89	5.4642%	3.4903%	1.5656
Sab - Terraced - Sandakan	3.2822%	1.3917%	1.8148%	0.7668	1.2148%	90	5.6839%	3.6296%	1.5660
Melaka (Mel) Terraced	8.0497%	1.3422%	1.7507%	0.7667	1.1918%	91	5.4778%	3.5014%	1.5645
KL - High-rise -Kuala Lumpur South	7.5045%	1.3024%	1.7002%	0.7660	1.1105%	92	5.3124%	3.4004%	1.5623
Perlis (Per) Terraced	4.0403%	1.3972%	1.8294%	0.7638	0.8087%	93	5.7071%	3.6588%	1.5598
Malaysian High-rise	5.1722%	1.3251%	1.7386%	0.7622	0.5966%	94	5.4066%	3.4772%	1.5549
4 Financial assets with	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Without residential property (benchmark)	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	118	5.5890%	3.6136%	1.5467
Kelantan (Kel) Detached	0.8984%	1.3879%	1.8215%	0.7620	0.5722%	95	5.6684%	3.6430%	1.5560
Pulau Pinang (Pen) High-rise	1.8244%	1.3622%	1.7899%	0.7610	0.4501%	96	5.5612%	3.5799%	1.5535
Sar - Terraced - Sibu	4.0009%	1.3466%	1.7697%	0.7609	0.4335%	97	5.4960%	3.5393%	1.5528

	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Pen - High-rise - Penang Island	1.6442%	1.3635%	1.7923%	0.7608	0.4154%	98	5.5668%	3.5846%	1.5530
Ked - Terraced - Kubang Pasu	2.0533%	1.3560%	1.7829%	0.7605	0.3836%	99	5.5352%	3.5658%	1.5523
Negeri Sembilan (Sem) High-rise	1.8058%	1.3487%	1.7749%	0.7599	0.2944%	100	5.5049%	3.5499%	1.5507
Melaka (Mel) All Houses	4.4861%	1.3490%	1.7756%	0.7598	0.2824%	101	5.5063%	3.5511%	1.5506
Joh - Terraced - Johor Bahru / Kota Tinggi / Pontian	2.4510%	1.3131%	1.7297%	0.7591	0.2004%	102	5.3569%	3.4595%	1.5485
Ked - Terraced - Kuala Muda	1.2541%	1.3606%	1.7948%	0.7581	0.0575%	103	5.5545%	3.5897%	1.5474
Melaka (Mel) Detached	0.3852%	1.3684%	1.8052%	0.7580	0.0501%	104	5.5869%	3.6105%	1.5474
Sab - Terraced - Kota	0.4237%	1.3711%	1.8094%	0.7577	0.0138%	105	5.5981%	3.6189%	1.5469
Kuala Lumpur (KL) Semi-detached	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	106	5.5890%	3.6136%	1.5467
Selangor (Sel) Detached	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	107	5.5890%	3.6136%	1.5467
Selangor (Sel) High-rise	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	107	5.5890%	3.6136%	1.5467
Johor (Joh) Detached	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	109	5.5890%	3.6136%	1.5467
Johor (Joh) High-rise	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	109	5.5890%	3.6136%	1.5467
Sel - High-rise - Hulu Langat	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	111	5.5890%	3.6136%	1.5467
Sel - High-rise - Petaling	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	111	5.5890%	3.6136%	1.5467
Melaka (Mel) Semi-detached	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	113	5.5890%	3.6136%	1.5467
4 Financial assets with	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of improvement	Ranking	Annual portfolio return	Annual portfolio risk	Annual return per one unit of risk
Without residential property (benchmark)	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	118	5.5890%	3.6136%	1.5467
Melaka (Mel) High-rise	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	114	5.5890%	3.6136%	1.5467

Mel - Terraced - Alor Gajah-Jasin	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	115	5.5890%	3.6136%	1.5467
Sem - Terraced - Port Dickson	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	116	5.5890%	3.6136%	1.5467
Sem - Terraced - Tampin & Others	0.0000%	1.3689%	1.8068%	0.7576	0.0000%	116	5.5890%	3.6136%	1.5467

Table 7: Mixed asset portfolio performance – financial assets with two residential properties (sorted by return per risk ratio)

4 Financial assets and terraced houses in Tawau, Sabah state with	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Without residential property (benchmark)	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	113	6.7644%	3.1741%
Perak (Per) All Houses	12.4010%	35.5509%	1.5261%	1.0614%	1.4379	38.3198%	1	6.2457%	2.1227%
Kelantan (Kel) Semi-detached	9.5908%	13.8416%	1.4970%	1.0513%	1.4240	36.9853%	2	6.1239%	2.1025%
Pahang (Pah) All Houses	11.3867%	26.9030%	1.6574%	1.1644%	1.4233	36.9196%	3	6.7961%	2.3289%
Pahang (Pah) Semi-detached	14.3157%	16.1030%	1.8032%	1.3316%	1.3542	30.2709%	4	7.4104%	2.6631%
Malaysian Detached	5.9179%	31.9505%	1.4076%	1.0546%	1.3347	28.3956%	5	5.7504%	2.1092%
Joh - Terraced - Segamat	12.4012%	26.8765%	1.4887%	1.1224%	1.3263	27.5847%	6	6.0889%	2.2448%
Pahang (Pah) Terraced	10.9669%	31.4658%	1.6015%	1.2316%	1.3003	25.0891%	7	6.5614%	2.4631%
Perak (Per) Semi-detached	14.3252%	19.7950%	1.5589%	1.2129%	1.2853	23.6428%	8	6.3831%	2.4258%
KL - Terraced -Kuala Lumpur South	12.3950%	28.1150%	1.5551%	1.2130%	1.2820	23.3266%	9	6.3670%	2.4260%
Kedah (Ked) Detached	9.4308%	8.6810%	1.6121%	1.2719%	1.2675	21.9245%	10	6.6060%	2.5439%
Pulau Pinang (Pen) All Houses	10.7067%	25.0249%	1.3768%	1.0876%	1.2659	21.7786%	11	5.6220%	2.1752%
Perak (Per) Terraced	13.7614%	28.0048%	1.5530%	1.2309%	1.2617	21.3700%	12	6.3582%	2.4618%
Ked - Semi-detached - Kulim	14.1391%	22.5513%	1.6414%	1.3106%	1.2525	20.4837%	13	6.7292%	2.6211%
Kedah (Ked) All Houses	14.2224%	23.5668%	1.6048%	1.2824%	1.2514	20.3798%	14	6.5755%	2.5649%
Pulau Pinang (Pen) Terraced	9.0013%	21.2231%	1.4603%	1.1807%	1.2368	18.9776%	15	5.9703%	2.3613%
Pah - Terraced - Kuantan	12.9361%	23.1401%	1.7023%	1.3947%	1.2205	17.4123%	16	6.9849%	2.7894%

4 Financial assets and terraced houses in Tawau, Sabah state with	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Sem - Terraced - Seremban	9.2830%	29.2842%	1.3498%	1.1095%	1.2166	17.0320%	17	5.5096%	2.2190%
Sarawak (Sar) All Houses	10.0999%	19.4753%	1.4352%	1.1829%	1.2133	16.7145%	18	5.8654%	2.3657%
Per - Terraced - Manjung	12.2832%	18.5574%	1.6871%	1.3949%	1.2095	16.3501%	19	6.9213%	2.7898%
Sar - Terraced - Kuching	11.8258%	12.3133%	1.5468%	1.2867%	1.2021	15.6424%	20	6.3321%	2.5733%
Without residential property (benchmark)	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	113	6.7644%	3.1741%
Negeri Sembilan (Sem) All Houses	11.3541%	37.5606%	1.3586%	1.1301%	1.2021	15.6411%	21	5.5461%	2.2603%
Selangor (Sel) Terraced	9.2470%	36.1401%	1.2812%	1.0738%	1.1932	14.7778%	22	5.2242%	2.1476%
Pah - Terraced - Temerloh	13.4168%	14.1795%	1.5812%	1.3371%	1.1825	13.7534%	23	6.4762%	2.6742%
Pulau Pinang (Pen) Detached	10.6061%	5.6235%	1.4571%	1.2352%	1.1796	13.4741%	24	5.9570%	2.4705%
Pen - Terraced - Seberang Perai	12.5853%	20.0084%	1.4823%	1.2624%	1.1742	12.9537%	25	6.0625%	2.5249%
Sel - Terraced - Petaling	10.6799%	24.5221%	1.4492%	1.2417%	1.1672	12.2766%	26	5.9241%	2.4833%
Kedah (Ked) Terraced	15.7911%	18.0367%	1.6177%	1.3881%	1.1654	12.1034%	27	6.6294%	2.7763%
Sel - Terraced - Kelang	12.3695%	29.7582%	1.4154%	1.2204%	1.1598	11.5659%	28	5.7828%	2.4408%
Sarawak (Sar) Terraced	11.4392%	15.2443%	1.4937%	1.2920%	1.1561	11.2127%	29	6.1100%	2.5840%
Per - Terraced - Hilir Perak	13.2408%	11.5553%	1.6272%	1.4084%	1.1554	11.1480%	30	6.6696%	2.8167%
Kuala Lumpur (KL) All Houses	9.6877%	27.9407%	1.5183%	1.3168%	1.1530	10.9186%	31	6.2131%	2.6336%
Ked - Semi-detached - Kuala Muda	14.0083%	13.3743%	1.6709%	1.4518%	1.1509	10.7112%	32	6.8530%	2.9037%

4 Financial assets and terraced houses in Tawau, Sabah state with	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Per - Terraced - Kinta	15.0455%	17.5157%	1.5877%	1.3817%	1.1491	10.5433%	33	6.5038%	2.7633%
Pen - Terraced - Penang Island	9.8527%	11.2037%	1.5535%	1.3541%	1.1472	10.3595%	34	6.3603%	2.7083%
Kedah (Ked) Semi-detached	13.9031%	11.3989%	1.6860%	1.4741%	1.1438	10.0298%	35	6.9166%	2.9481%
Mel - Terraced - Melaka Tengah	15.2976%	16.2953%	1.6440%	1.4396%	1.1420	9.8549%	36	6.7402%	2.8793%
Terengganu (Ter) All Houses	10.8793%	12.5406%	1.5888%	1.3950%	1.1389	9.5571%	37	6.5083%	2.7901%
Ter - Terraced - Kemaman	15.4532%	9.2756%	1.7309%	1.5276%	1.1331	8.9985%	38	7.1054%	3.0552%
Without residential property (benchmark)	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	113	6.7644%	3.1741%
Sarawak (Sar) Semi-detached	11.5728%	14.6914%	1.4916%	1.3171%	1.1325	8.9461%	39	6.1014%	2.6342%
Malaysian Semi-detached	9.7398%	24.2637%	1.4230%	1.2568%	1.1322	8.9177%	40	5.8148%	2.5137%
Per - Terraced - Batang Padang	12.9840%	11.7300%	1.6706%	1.4794%	1.1292	8.6277%	41	6.8519%	2.9589%
Terengganu (Ter) Detached	13.9229%	4.8411%	1.6653%	1.4768%	1.1276	8.4759%	42	6.8294%	2.9536%
Perlis (Per) All Houses	11.9283%	12.0173%	1.6543%	1.4674%	1.1273	8.4471%	43	6.7830%	2.9348%
Joh - Terraced - Batu Pahat	11.7188%	21.8507%	1.4545%	1.2944%	1.1237	8.0950%	44	5.9464%	2.5889%
Ked - Semi-detached - Kota Setar	12.2545%	10.4620%	1.6804%	1.4982%	1.1216	7.8985%	45	6.8931%	2.9964%
Sarawak (Sar) Detached	12.4021%	6.2590%	1.6142%	1.4408%	1.1204	7.7757%	46	6.6149%	2.8816%
Kuala Lumpur (KL) Terraced	10.5979%	19.2112%	1.5658%	1.4012%	1.1175	7.4979%	47	6.4120%	2.8024%
Pahang (Pah) Detached	13.6599%	3.0901%	1.7197%	1.5439%	1.1139	7.1486%	48	7.0581%	3.0878%
Ked - Terraced - Kuala Muda	16.1527%	12.0468%	1.6182%	1.4548%	1.1123	7.0039%	49	6.6318%	2.9096%

4 Financial assets and terraced houses in Tawau, Sabah state with	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Ked - Terraced - Kulim	15.4811%	10.4388%	1.6923%	1.5234%	1.1109	6.8607%	50	6.9430%	3.0468%
Ked - Terraced - Kota Setar	14.3170%	11.9293%	1.6724%	1.5057%	1.1107	6.8484%	51	6.8592%	3.0113%
Perak (Per) Detached	11.7634%	5.1305%	1.6209%	1.4613%	1.1092	6.7050%	52	6.6430%	2.9226%
Melaka (Mel) Terraced	15.1858%	16.3252%	1.6239%	1.4651%	1.1084	6.6266%	53	6.6556%	2.9301%
KL - Terraced -Kuala Lumpur North	10.9444%	17.5129%	1.6087%	1.4565%	1.1045	6.2451%	54	6.5917%	2.9131%
Negeri Sembilan (Sem) Semi-detached	13.4612%	9.2792%	1.6138%	1.4643%	1.1021	6.0159%	55	6.6130%	2.9286%
Sabah (Sab) Detached	12.9650%	2.5793%	1.6675%	1.5132%	1.1020	6.0048%	56	6.8388%	3.0265%
Negeri Sembilan (Sem) Detached	12.0893%	8.7688%	1.5351%	1.3943%	1.1009	5.9040%	57	6.2831%	2.7887%
Without residential property (benchmark)	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	113	6.7644%	3.1741%
Melaka (Mel) All Houses	15.4373%	17.5771%	1.6054%	1.4588%	1.1005	5.8626%	58	6.5777%	2.9175%
Kelantan (Kel) All Houses	14.8736%	12.3529%	1.6154%	1.4696%	1.0992	5.7408%	59	6.6199%	2.9392%
Pen - High-rise - Seberang Perai	13.3940%	8.8016%	1.5733%	1.4348%	1.0965	5.4840%	60	6.4434%	2.8696%
Joh - Terraced - Keluang	12.4766%	10.9767%	1.5398%	1.4121%	1.0904	4.8966%	61	6.3029%	2.8242%
KL - High-rise -Kuala Lumpur South	13.6694%	12.3629%	1.5081%	1.3861%	1.0880	4.6599%	62	6.1701%	2.7722%
Ter - Terraced - Kuala	14.4869%	6.4259%	1.6616%	1.5397%	1.0792	3.8120%	63	6.8140%	3.0795%

Terengganu									
Negeri Sembilan (Sem) Terraced	13.3658%	18.4423%	1.5058%	1.4018%	1.0742	3.3306%	64	6.1604%	2.8036%
Pulau Pinang (Pen) High-rise	15.0547%	4.1946%	1.6394%	1.5286%	1.0725	3.1712%	65	6.7206%	3.0571%
Pen - High-rise - Penang Island	15.0779%	3.8575%	1.6430%	1.5340%	1.0711	3.0348%	66	6.7359%	3.0680%
Selangor (Sel) All Houses	10.6562%	22.6135%	1.3993%	1.3065%	1.0710	3.0283%	67	5.7159%	2.6131%
Joh - Terraced - Muar	11.8217%	10.2670%	1.4924%	1.3958%	1.0692	2.8524%	68	6.1046%	2.7916%
Kuala Lumpur (KL) High-rise	12.0544%	11.6007%	1.5233%	1.4257%	1.0684	2.7798%	69	6.2338%	2.8514%
Negeri Sembilan (Sem) High-rise	14.8237%	4.8277%	1.6167%	1.5134%	1.0682	2.7615%	70	6.6254%	3.0269%
Kuala Lumpur (KL) Detached	13.7563%	5.4925%	1.6798%	1.5732%	1.0677	2.7129%	71	6.8903%	3.1464%
Kelantan (Kel) Terraced	13.4401%	8.4917%	1.5991%	1.4978%	1.0676	2.7021%	72	6.5514%	2.9956%
Pah - Terraced - Jerantut	14.3466%	6.0740%	1.6180%	1.5159%	1.0674	2.6777%	73	6.6308%	3.0317%
Sel - Terraced - Hulu Langat	13.2578%	12.6486%	1.5257%	1.4313%	1.0660	2.5459%	74	6.2441%	2.8625%
Malaysian High-rise	14.2164%	9.0775%	1.5718%	1.4751%	1.0656	2.5051%	75	6.4371%	2.9502%
4 Financial assets and terraced houses in Tawau, Sabah state with	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Without residential property (benchmark)	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	113	6.7644%	3.1741%
KL - High-rise -Kuala Lumpur Central	13.3132%	6.8556%	1.6101%	1.5112%	1.0654	2.4891%	76	6.5975%	3.0225%
Sabah (Sab) Semi-detached	13.5416%	5.5316%	1.6210%	1.5237%	1.0639	2.3407%	77	6.6435%	3.0474%
Pah - Terraced - Bentong Lipis-Raub	12.5071%	4.1408%	1.6022%	1.5145%	1.0579	1.7663%	78	6.5643%	3.0289%

	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Melaka (Mel) Semi-detached	16.1724%	5.0821%	1.6771%	1.5856%	1.0577	1.7484%	79	6.8792%	3.1713%
Terengganu (Ter) Semi-detached	12.4943%	3.5856%	1.6233%	1.5353%	1.0574	1.7138%	80	6.6531%	3.0705%
Johor (Joh) Semi-detached	14.1031%	2.4359%	1.6040%	1.5235%	1.0528	1.2795%	81	6.5719%	3.0469%
Perlis (Per) Terraced	14.8123%	4.0063%	1.6807%	1.5978%	1.0519	1.1877%	82	6.8944%	3.1957%
Pulau Pinang (Pen) Semi-detached	12.9747%	5.0580%	1.5655%	1.4885%	1.0517	1.1716%	83	6.4105%	2.9770%
Terengganu (Ter) Terraced	13.5255%	4.3413%	1.6219%	1.5425%	1.0514	1.1456%	84	6.6471%	3.0851%
Per - Terraced - Kuala Kangsar	12.9472%	5.5176%	1.6236%	1.5450%	1.0509	1.0895%	85	6.6543%	3.0900%
Kelantan (Kel) Detached	14.6901%	1.0533%	1.6535%	1.5748%	1.0500	1.0018%	86	6.7798%	3.1496%
KL - Terraced -Kuala Lumpur Central	13.8999%	2.9143%	1.6450%	1.5713%	1.0468	0.7029%	87	6.7440%	3.1427%
Kuala Lumpur (KL) Semi-detached	14.6205%	3.0098%	1.6196%	1.5489%	1.0456	0.5853%	88	6.6373%	3.0978%
Sar - Terraced - Miri	13.9349%	3.1470%	1.5969%	1.5281%	1.0450	0.5285%	89	6.5421%	3.0561%
Sel - High-rise - Hulu Langat	13.9734%	6.7298%	1.5532%	1.4882%	1.0437	0.3998%	90	6.3591%	2.9764%
Sab - Terraced - Kota	14.9629%	2.0302%	1.6717%	1.6018%	1.0437	0.3977%	91	6.8565%	3.2035%
Sabah (Sab) High-rise	14.2956%	1.1231%	1.6531%	1.5842%	1.0435	0.3802%	92	6.7782%	3.1684%
4 Financial assets and terraced houses in Tawau, Sabah state with	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Without residential property (benchmark)	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	113	6.7644%	3.1741%

Sel - Terraced - Gombak	13.8336%	2.8587%	1.6092%	1.5427%	1.0431	0.3423%	93	6.5938%	3.0854%
Perlis (Per) Semi-detached	14.1007%	2.0326%	1.6623%	1.5952%	1.0421	0.2447%	94	6.8169%	3.1904%
Johor (Joh) Terraced	13.9331%	2.6355%	1.5859%	1.5231%	1.0412	0.1588%	95	6.4959%	3.0462%
Johor (Joh) All Houses	14.2928%	1.4115%	1.6165%	1.5544%	1.0399	0.0371%	96	6.6244%	3.1088%
Johor (Joh) High-rise	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	97	6.7644%	3.1741%
Johor (Joh) Detached	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	97	6.7644%	3.1741%
Joh - Terraced - Johor Bahru / Kota Tinggi / Pontian	14.6761%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	99	6.7644%	3.1741%
Sel - High-rise - Petaling	14.6761%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	100	6.7644%	3.1741%
Ked - Terraced - Kubang Pasu	14.6761%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	101	6.7644%	3.1741%
Mel - Terraced - Alor Gajah-Jasin	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	102	6.7644%	3.1741%
Selangor (Sel) Semi-detached	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	103	6.7644%	3.1741%
Selangor (Sel) High-rise	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	103	6.7644%	3.1741%
Selangor (Sel) Detached	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	103	6.7644%	3.1741%
Melaka (Mel) High-rise	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	106	6.7644%	3.1741%
Melaka (Mel) Detached	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	106	6.7644%	3.1741%
KL - High-rise -Kuala Lumpur North	14.6761%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	108	6.7644%	3.1741%
Sem - Terraced - Tampin & Others	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	109	6.7644%	3.1741%

4 Financial assets and terraced houses in Tawau, Sabah state with	% of terraced houses in Tawau, Sabah state	% of Residential property	Quarterly portfolio return	Quarterly portfolio risk	Return per one unit of risk	% of Improvement	Ranking	Annual portfolio return	Annual portfolio risk
Without residential property (benchmark)	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	113	6.7644%	3.1741%
Sem - Terraced - Port Dickson	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	109	6.7644%	3.1741%
Sab - Terraced - Sandakan	14.6760%	0.0000%	1.6498%	1.5871%	1.0395	0.0000%	111	6.7644%	3.1741%
Sar - Terraced - Sibu	14.6762%	0.0000%	1.6499%	1.5871%	1.0395	0.0000%	112	6.7646%	3.1742%