# TRADING BETWEEN RISK & REWARD (I)

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- Auctioning
- Market Research & Feasibility Studies
- Property Investment Consultancy
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- Bio Asset Valuation
- Forensic Valuation

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# Summary

## House Price Index

The House Price Index is becoming an important tool to gauge the health of a nation's economy. The first official Malaysian House Price Index (MHPI) was only introduced in 1997 and is currently published by the National Property Information Centre (NAPIC). The index is transaction-based, which captures the changes in prices paid for an "average" house for a certain period and compared them to a base period. The criteria for base period, house weightage, and timeframe of this analysis were determined prior to the examination.

## Risk & Reward

Using the MHPI, risk and reward of the housing market were computed. Risk is basically the volatility of the market and was measured as standard deviation from the average return. Reward; which is better known as return, is the measurement of changes in prices. Most investors tend to focus only on reward and failed to identify the associated risk. A **risk-adjusted return** would prove to be more meaningful when making an investment decision. Such figures could be generated from the risk/reward ratio (coefficient of variance and Sharpe ratio). Several limitations were identified; mainly the pattern of data distribution, model suitability, mode of return used, and market efficiency.

Annualized returns in relative terms were the highest for detached houses over the course of 10 years. This was followed by semi-detached, high-rise units, and terrace houses. Prices for all house types were in steady appreciation throughout the timeframe being examined, with high-rise units posting exceptional growth in the last 3 years.

The returns from the last 3 years had been increasing at a faster rate than the average of the last 10 years. High-rise units recorded the highest volatility whereas semi-detached houses were the lowest. A peak was seen formed at 2012, and reversal of uptrend was witnessed in 2013. The degree of this reversal has yet to be determined.

## Risk/Reward Ratio

The calculation results from both coefficient of variance and Sharpe ratio were consistent in providing the best **risk-adjusted return** grading. For the 10-year period, semi-detached houses were the most ideal, followed by detached, terrace, and high-rise. For the 3-year period, the most favorable house type was terrace, followed by semi-detached, high-rise, and detached.

# Definition of House Price Index

In modern times after the end of World War 2, the health of a nation's economy is most often measured through conventional indicators such as GDP growth, unemployment rate, inflation rate, and interest rate. While such indicators formed the core data for most economists, a gauge of the relative health of a country's housing market is becoming an increasingly important instrument in determining the pace of the economy.

The housing market usually forms a large portion in the real estate market through purchases by individuals and firms as a store of value or a source of income. As mentioned in the previous article of 'Living within the Valley'; total value of the property market in Malaysia was about 15% of the nation's nominal GDP in 2013. Thus the performance of the housing market affects both the national and local economy. Developments in housing prices are of interest to homebuyers, builders, mortgage lenders, households, policymakers, and other parties involved in the housing industry.

According to Nurul Hana (2011), house price movements act as an indicator for the health of macro economy, financial developments, and social phenomena. House price indices have long been implemented in developed countries such as the United States of America, the United Kingdom, Canada, and Germany. Whereas in Malaysia, the interest of such indices only arose after the sharp property inflation back in 1995. Nonetheless, the first national house price index was only created 2 years after the initial interest. The Malaysian House Price Index (MHPI) was formerly published by the National Institute of Valuation (INSPEN) and subsequently by the National Property Information Centre (NAPIC). It is jointly reported by the Central Bank of Malaysia.

Referring to Bank Negara Malaysia (2014), MHPI is a transaction-based house price index, which captures the change in prices paid for an "average" house. Price change is estimated by pricing a basket of house characteristics of the "average" house transacted in the current period and comparing the price with those in the base year (2000). The ratio shows how much the cost of housing has changed between two periods (the base and the current periods) if the house buyers maintain the standard of living in the latter period.

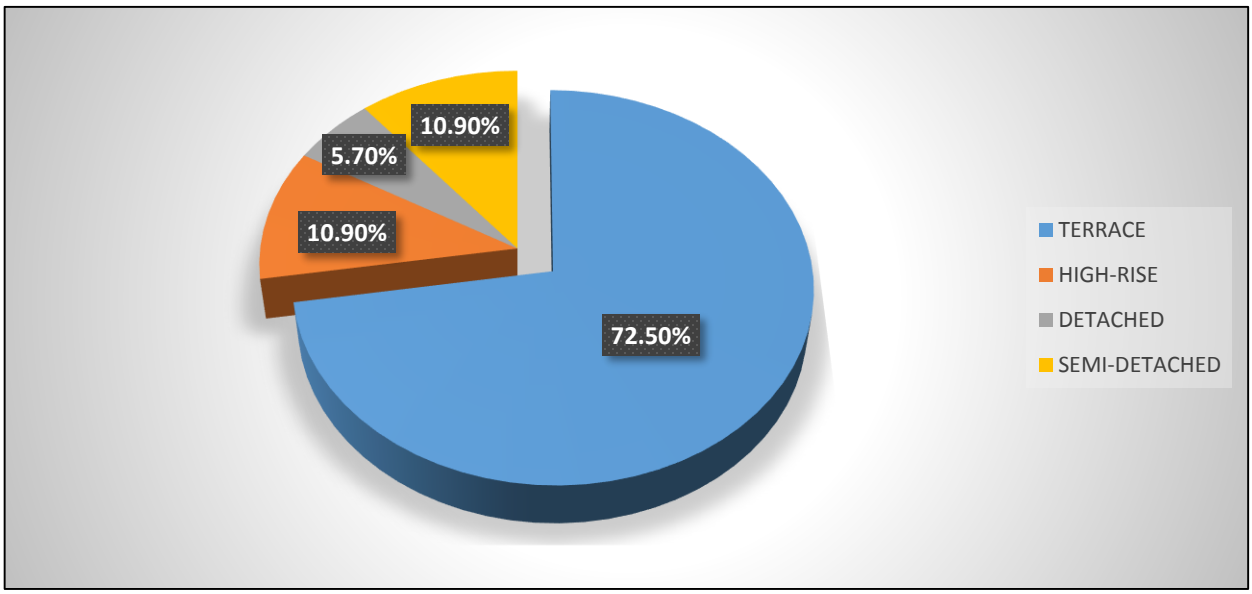
# Components of House Price Index

In this article, the specifications of the MHPI criteria used are as follow:

1. **Base period**
   As mentioned in the earlier section, the base year used is 2000 and the initial weight is 100 (2000 = 100)

2. **House weightage**
   There are a total of 4 different types of residential houses included. They are depicted in Figure 1, with the same consistent weightage since its inception.

**Figure 1:** Components of Malaysian House Price Index (MHPI) (NAPIC, 2014).




3. **Timeframe**
   The total timeframe being included was 10 years; which is from 2004 to 2013. Quarterly readings were included as well but most calculations were based on annualized mean (average) returns.

# Definition of Risk & Reward

Utilizing the movement of house prices in the MHPI; the risk and reward of the Malaysian housing industry is computed. Both of these constituents will be further elaborated below.

**Risk (Volatility)**

In investment term, risk is defined as the change that an investment's actual return will be different from expectations (Investopedia, 2014). Different versions of risk are usually measured by calculating the standard deviation of the historical returns or average returns of a specific investment. A high standard deviation indicates a high degree of risk.

**Reward (Return)**

The term reward, which is simply known as return; is defined by Investopedia (2014) as the gain or loss of an asset in a particular period. The return consists of the income and capital gains relative on an investment and is usually quoted as a percentage.

Due to the nature of this analysis, only the underlying capital price (house price) changes were captured in this paper. Other notable factors such as rental income and costs of transactions, financing, and maintenance were omitted from the equation.

**Risk/Reward Ratio**

A fundamental idea in finance is the relationship between risk and return. The greater the amount of risk that an investor is willing to take on, the greater the potential of return or loss (Investopedia, 2014). The reason for this is that investors need to be compensated for taking on additional risk.

According to Cramer (2012), focusing on an asset's upside without giving proper consideration to potential losses, can be "a grave mistake". Too often people think only of the reward, without assessing the risk; and investors must calculate both. He argued that most people ignored risk "because of the pain from a big loss, which hurts a whole lot more than the pleasure from an equivalent-sized gain".

# Definition of Risk & Reward

**Risk/Reward Ratio (Cont'd)**

Referring to Investopedia (2014), the risk/reward ratio is used by many investors to compare the expected returns of an investment to the amount of risk undertaken. This ratio is calculated mathematically by dividing the amount the person stands to lose if the price moves in the unexpected direction (the risk) by the amount of profit the person expects to have made when selling the asset (the reward).

In this analysis, 2 different ratios will be used; namely the risk/reward ratio (coefficient of variance) and the Sharpe ratio.

**Limitations**

There were several limitations when using this method in the property market. However, the utilization of such method would indirectly shed some light on the significance of risk and reward. Those identified limitations include:

1. **Normality test**
   The YOY rate of return in the MHPI for the 10-year period is not normally distributed (skewed to the right). Remedial would be to expand the time frame being studied to include more data sets. However, the degree of normality in such data sets has yet to be determined.

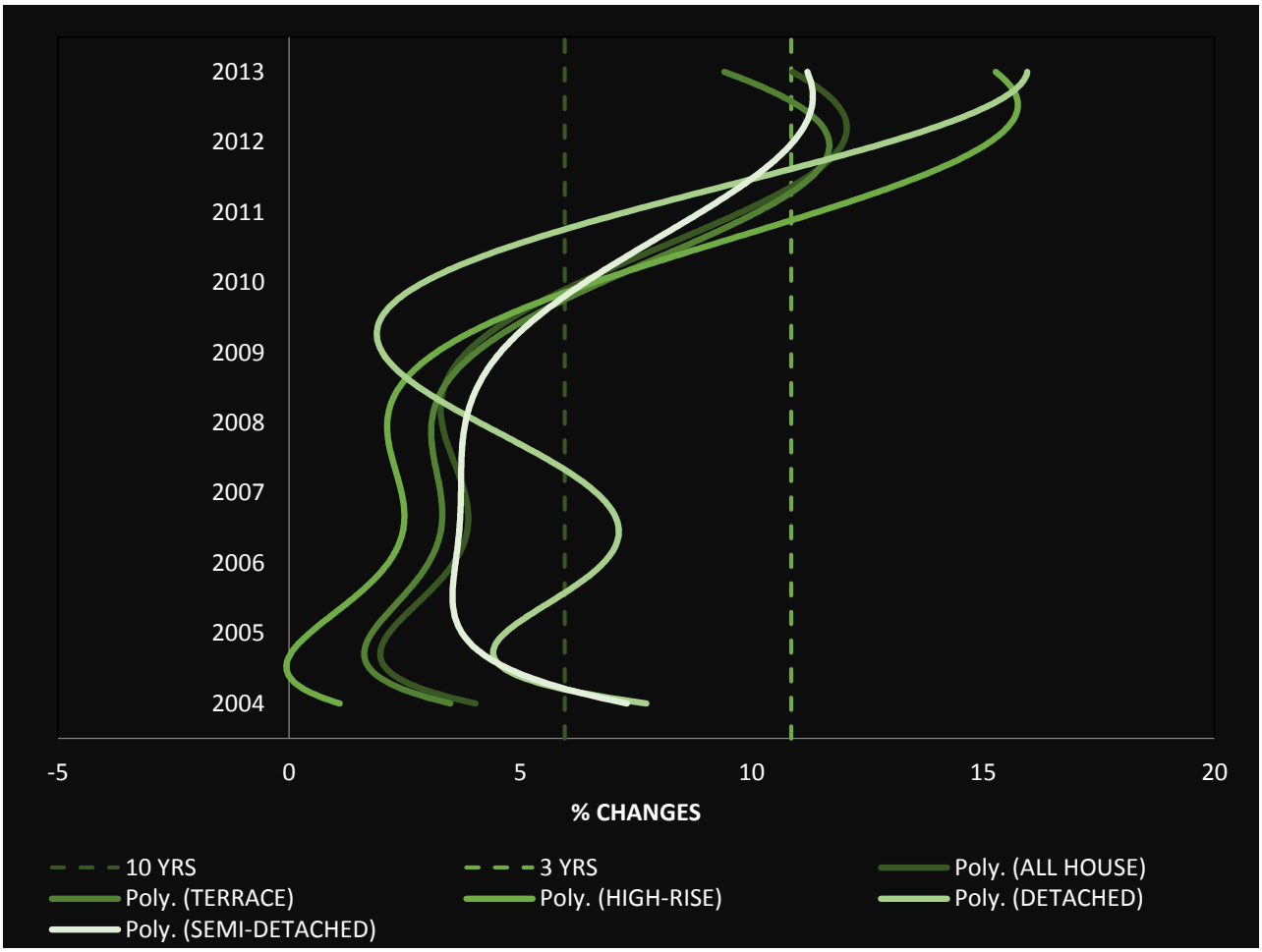
2. **Model suitability**
   This method which is widely used in the securities market but is deemed less fitting in the property market. This is due to the unique nature of the property market compared to the securities market. Risk is not usually addressed and quantified in the property market.

3. **Mode of return**
   As mentioned earlier, the mode of return is only calculated as house price appreciation and not taking into account other factors such as rental income and cost.

4. **Market efficiency**
   Property market is not as efficient and liquid as the securities market. There may be time lag and delays when adjusting to a changing variable. Critical decision-making information is not readily available to the public.

# Returns in Relative terms

**Figure 2:** Annualized average returns from 2004 – 2013. (NAPIC, 2014).




**Relative terms**

In this section, returns in MHPI were measured in relative terms (percentage changes). It was observed that movements for polynomial curves in relative terms were quite volatile. The 3-year average line (10.85%) was higher than 10-year (5.96%); implicating that annualized returns were higher in the last 3 years compared to the last 10 years.

While the returns were most modest (< 5%) from 2004 to 2009, pickup in returns were only detected from 2010 onwards. This may be due to the spillover effects of the US Federal Reserve creating excess liquidity in the market through Quantity Easing methods and low interest rate. Whereas Malaysia has its own fair share of accommodative policies to support the economy from the aftermath of the subprime mortgage crisis.

# Returns in Relative terms

**Relative terms (Cont'd)**

This has in turn created a scenario across the globe where cheap money was chasing after limited number of quality assets. Real estates were one of these assets due to its scarce nature

It was observed from the polynomial curves that most house types followed a similar trend during ups and downs (although in varying degrees), except for detached houses. High-rise units had the highest volatility than all the other categories. This implies that this class tends to have higher returns in uptrends and higher losses in downtrends. This was followed by terrace houses, all houses, and semi-detached houses. The volatility for detached houses was quite elevated as well (comparable to high-rise units), but they did not adhere to the overall trend.

All of the house types were above the 10-year average line but some of them were converging towards the 3-year average line. Terrace houses were below, all houses and semi-detached houses were nearing, and high-rise units and detached houses were still above the 3-year average line. A peak was seen forming in 2012, and a reversal in the uptrend was observed in 2013.

However, the degree of this reversal has yet to be determined. If this downtrend was to be persistent in the near-term, high-rise units and detached houses would be more severely affected due to their great volatility nature and their high positions above the average line. Whereas terrace houses and semi-detached houses would be less affected due to their lower volatility nature and proximity to the average line.

It is worth noting that the overall performance of MHPI (all-house) has only recorded 2 periods of annualized **negative** readings since its inception; which were from 1998 to 1999 during the Asian Financial Crisis. At the peak of the previous subprime mortgage crisis, the Malaysian housing market shown resilience by posting positive growth rates; though at a slower pace.

# Risk/Reward Ratio

**Table 1:** Average return (reward) and standard deviation (risk) for 10 years and 3 years.

| HOUSING TYPE | ALL HOUSE (AH) | TERRACE (T) | HIGH-RISE (HR) | DETACHED (D) | SEMI-DETACHED (SD) |
|---|---|---|---|---|---|
| MEAN (10 YRS): 2004 - 2013 | 8.44 | 7.90 | 8.53 | 10.58 | 9.32 |
| MEAN % Y-O-Y (10 YRS) | 5.96 | 5.66 | 5.98 | 7.10 | 6.41 |
| STD. DEVIATION (10 YRS) | 3.45 | 3.44 | 5.52 | 4.33 | 3.04 |
| **HOUSING TYPE** | **ALL HOUSE (AH)** | **TERRACE (T)** | **HIGH-RISE (HR)** | **DETACHED (D)** | **SEMI-DETACHED (SD)** |
| MEAN (3 YRS): 2011 - 2013 | 17.14 | 16.20 | 21.19 | 19.88 | 17.00 |
| MEAN % Y-O-Y (3 YRS) | 10.85 | 10.50 | 13.88 | 11.56 | 10.18 |
| STD. DEVIATION (3 YRS) | 0.81 | 0.73 | 1.94 | 4.81 | 1.25 |

**Reward (Return)**

For the 10-year period, annualized average return in relative terms was the highest for detached houses (7.10%), followed by semi-detached (6.41%), high-rise (5.98%), and lastly terrace (5.66%).

In the 3-year period, the highest annualized return was observed for high-rise (13.88%), followed by detached (11.56%), terrace (10.50%), and semi-detached (10.18%).

**Risk (Standard Deviation/Volatility)**

For the 10-year period, annualized average standard deviation was the highest for high-rise units (5.52), followed by detached (4.33), terrace (3.44), and lastly semi-detached (3.04).

In the 3-year period, the highest annualized standard deviation was observed for detached houses (4.81), followed by high-rise (1.94), semi-detached (1.25), and terrace (0.73).

# Risk/Reward Ratio

**Figure 3:** Risk/reward ratio (Coefficient of variance).

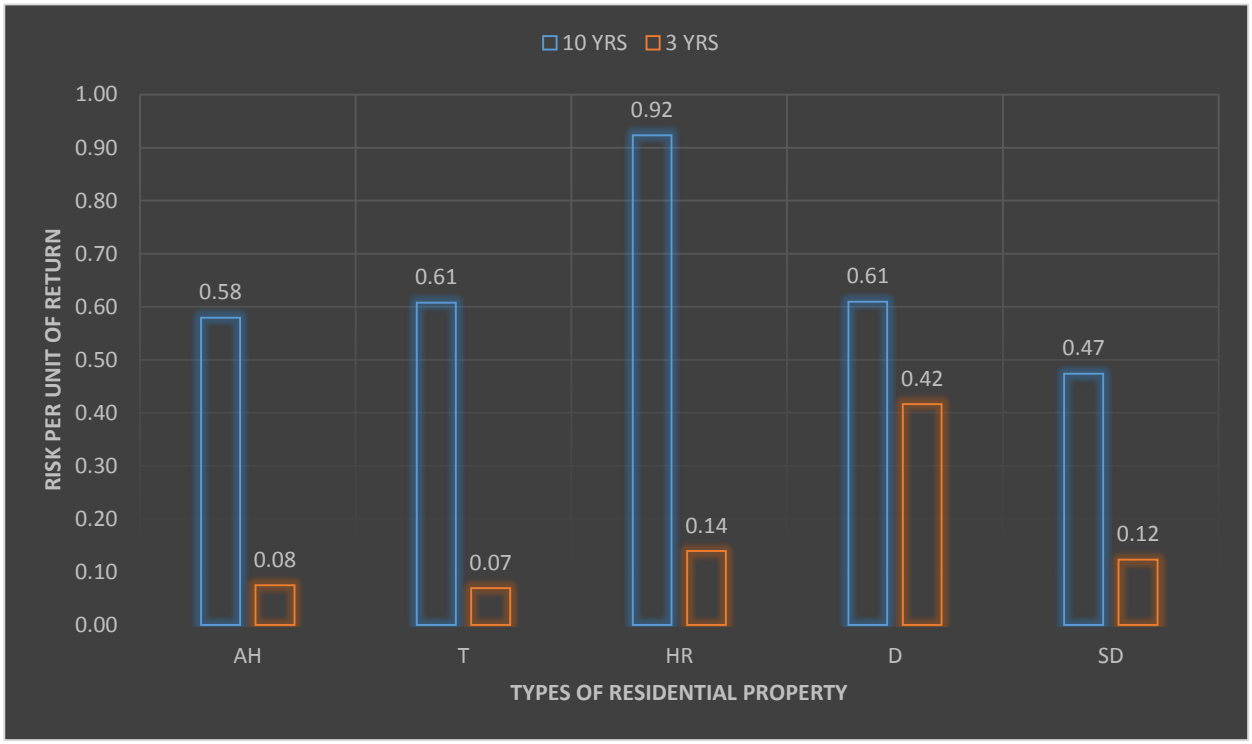
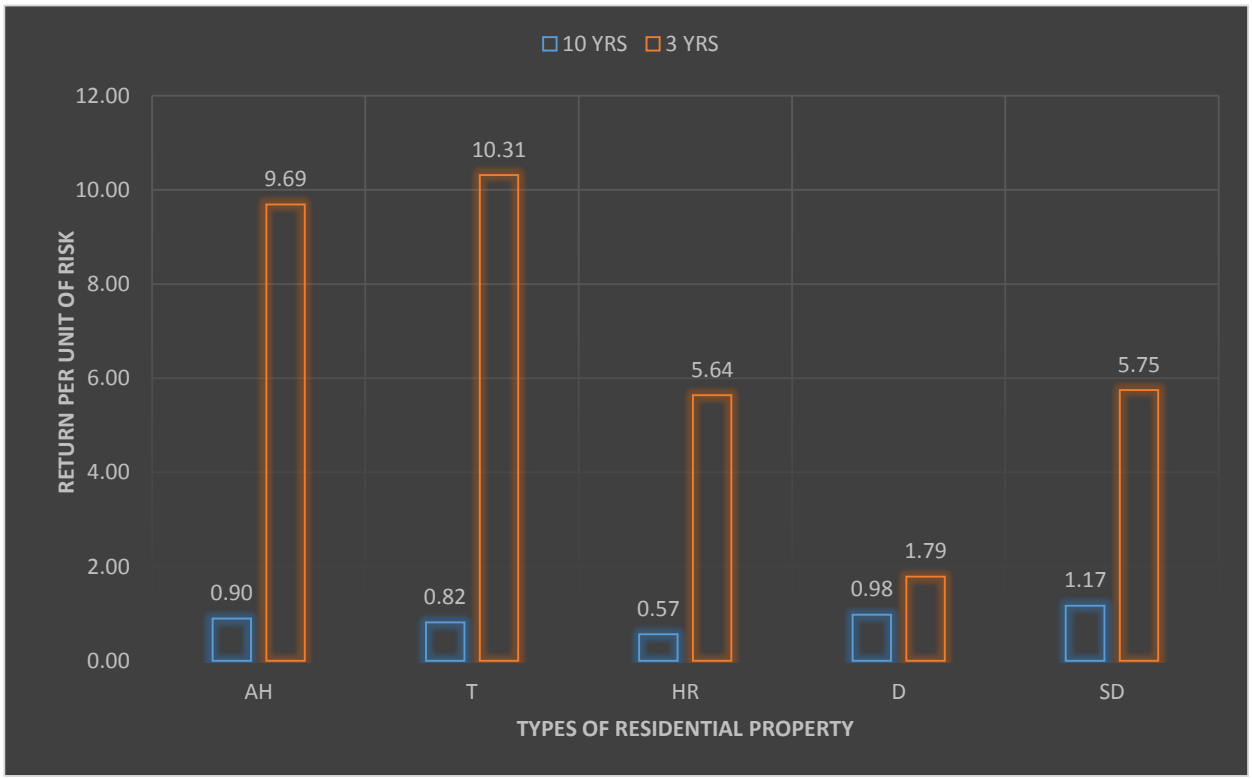



**Figure 4:** Reward/risk ratio (Sharpe ratio).



# Risk/Reward Ratio

**Table 2:** Ranking of house types in terms of favourability; using coefficient of variance and Sharpe ratio.

| COEFFICIENT OF VARIANCE | TYPE | VALUE | SHARPE RATIO | TYPE | VALUE |
|---|---|---|---|---|---|
| **10 YRS** | SD | 0.47 | **10 YRS** | SD | 1.17 |
| | AH | 0.58 | | D | 0.98 |
| | D | 0.61 | | AH | 0.90 |
| | T | 0.61 | | T | 0.82 |
| | HR | 0.92 | | HR | 0.57 |
| **3 YRS** | T | 0.07 | **3 YRS** | T | 10.31 |
| | AH | 0.08 | | AH | 9.69 |
| | SD | 0.12 | | SD | 5.75 |
| | HR | 0.14 | | HR | 5.64 |
| | D | 0.42 | | D | 1.79 |

**AH** = All House, **D** = Detached, **HR** = High-rise,
**SD** = Semi-detached, **T** = Terrace

**Risk/Reward ratio**
The general risk/reward ratios used are as follow:

**1. Coefficient of Variance** = Standard Deviation / Mean Return
: (Amount of risk per unit of return)

**2. Sharpe Ratio** = [Mean Return – Risk-free rate) / Standard Deviation
: (Amount of return per unit of risk)

The order of ranking for **risk-adjusted returns** were consistent for both Coefficient of variance and Sharpe ratio.

For the 10-year period, semi-detached houses were the most ideal, followed by detached, terrace, and high-rise.

For the 3-year period, the most favorable house type was terrace, followed by semi-detached, high-rise, and detached.

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