

CHAPTER 3

HYPOTHESIS, RESEARCH METHODOLOGY AND VALUATION

OF A FUND

3.1 HYPOTHESIS OF THE STUDY

As mentioned before, we want to test the difference between the Islamic unit trust and the conventional unit trust performance. The forthcoming result should give a basic understanding about the current performance of the Islamic unit trust and its viability compared to the conventional unit trust. Based on previous literature the null hypothesis of the study is as follows:

H_0 = There are no differences in performance between Islamic unit trust and conventional unit trust.

3.2 RESEARCH METHODOLOGY

This chapter also describes the research methodology used in the study, which can be divided into three major sections. Those sections are as below:

1. Sample selection;
2. Data Collection Techniques; and
3. Data Analysis Techniques.

3.2.1 Sample Selection

For these research purposes, sixteen funds are selected comprising of eight Islamic funds and eight conventional funds. Until December 2000 there are fifteen Islamic unit trusts, which are operational in the market. However, since the emphasis of the research is to study the performance of the unit trust for a three-year period from January 1998 until December 2000, five out of fifteen unit trusts that were introduced after January 1998 are removed from the selected sample.

Furthermore, due to the difficulties of gathering the complete data, another two unit trusts including one state fund are left out, namely Tabung Amanah Bakti, which is managed by the Asia Unit Trust Berhad, and Amanah Saham Kedah, which is managed by the Amanah Saham Kedah Berhad.

In the research, five out of the eight Islamic unit trusts selected are offered by management companies, which also manage conventional unit trust. Only three funds are managed by purely Islamic fund managers and these are ABRAR Investment Fund, Amanah Saham Bank Islam, and Amanah Saham Darul Iman.

Since almost all Islamic funds are income and growth funds, only conventional funds that share the same objective are selected. Up to December 2000, there were thirty-six growth and income conventional funds in the market. Moreover, due to the limited Islamic funds and the fact that only one Islamic fund is managed by fund managers which offered a dual fund system, only one conventional unit trust offered by the same management company is selected. The selection of both the Islamic and conventional fund managed by the same management company is one of the important criteria in the research because the fund manager has direct influence on both types of funds, which usually have about the same performance.¹

Under both the Islamic and conventional samples selected, there is one state fund for each sample namely Amanah Saham Darul Iman and Amanah Saham Selangor respectively. Amanah Saham Selangor is randomly chosen because of the fund size, which is about the same with Amanah Saham Darul Iman as well as having the same objective. As for comparison to the Islamic Funds, which are offered by single Islamic system institutions that is Amanah Saham Bank Islam and Abrar Investment Fund, two conventional funds with the same objective namely, Maybank Unit Trust and Pacific Premium Fund are randomly selected and placed into the sample.

The sample of Islamic and conventional unit trust consists of selected funds shown as follows:

Table 3.1 Islamic Funds

No.	Name of fund	Management companies	Launch date
1	Dana Putra BBMB (Currently known as Lifetime Dana Putra)	Commerce Trust Berhad	15.06.1995
2	Abrar Investment Fund	Abrar Unit Trust Management Berhad	12.3.1996
3	Amanah Saham Bank Islam	BIMB unit trust Management Berhad	30.06.1994
4	Dana al-Aiman	ASM Mara Unit trust management Berhad	19.05.1997
5	Kuala Lumpur Ittikal Fund	Kuala Lumpur Mutual Fund Berhad	29.03.1981
6	Tabung Ittikal Arab Malaysian	AMMB Investment Services Berhad	18.12.1992
7	RHB Mudharabah Fund	RHB Unit Trust Management Berhad	09.05.1996
8	Amanah Saham Darul Iman	PTB Unit Trust Berhad	31.10.1994

Table 3.2 Conventional Funds

No.	Name of fund	Management companies	Launch date
1	BBMB Unit Trust Fund	Commerce Trust Berhad	19.08.1989

2	Maybank Unit Trust Fund	Maybank Management Berhad	26.03.1992
3	Pacific Premier Fund	Pacific Mutual Fund Berhad	10.08.1995
4	ASM First Public Fund	ASM Mara Unit Trust Management Berhad	20.04.1992
5	Kuala Lumpur Savings Fund	Kuala Lumpur Mutual Fund Berhad	29.03.1981
6	Arab Malaysian First Fund	AMMB Investment Services Berhad	10.01.1989
7	RHB Dynamic Fund	RHB Unit Trust Management Berhad	15.09.1992
8	Amanah Saham Selangor	Tabung Amanah Saham Selangor Berhad	24.07.1994

3.2.2 Data Collection Techniques

Basically we use two methods in searching for the relevant information:

1. Library Research
2. Fieldwork

3.2.2.1 Library Research

By using this method, we analyze material from master prospectus provided by selected companies, The Edge, Investor Digest, Annual or Semi Annual Report of chosen funds, Bank Negara Reports, Trust Deeds, books, journals and various

publications from the University of Malaya Main Library, the Perpustakaan Peringatan Za'aba, and other libraries.

3.2.2.2 Fieldwork

In the course of the research, a number of officials from several unit trust management companies, the Securities Commission, KLSE, Bank Negara and FMUTM are contacted and interviewed in order to gain first hand information regarding the unit trust operations.

3.2.3 Data Analysis Techniques

Several indexes are introduced into the market such as Sharpe, Treynor and Jensen ex-post alpha to measure the performance of a portfolio. Nevertheless for the sake of this research, we will use only Sharpe Index because the index incorporates both risk and return. Besides that Treynor and Jensen was criticized by Roll because of the necessity of deriving the actual composition of the market portfolio before any reliable performance evaluation can be carried out.² However, Sharpe Index has also been found to be a biased measure.³ Subsequently, introducing the adjusted Sharpe Index, which is used in this study, mitigates this problem.

As far as performance is concerned, the average risk free rate is found from the monthly yield for a three-month Malaysian Treasury Bill from January 1998 until December 2000. To serve as a benchmark, the KLSE Emas Index is used. KLSE Emas Index is an appropriate proxy for market portfolio since it covers all stocks traded in the market. Furthermore due to the study that concerns comparing the conventional unit trust with the Islamic unit trust that is restricted only to invest in permissible stocks, KLSE Emas Index that comprises all stocks regardless the status can be a better and more fair benchmark. The nature of the unit trust

companies that try to diversify their investment by investing in second and third liner stocks also show the superior of KLSE Emas over KLSE Composite Index.

3.2.3.1 Continuously Compounded Rate of Return and Sharpe Index

Method for calculating the rates of return based on the continuously compounded which has adopted by Jansen⁴.

$$R_{j,t} = \log e \frac{NA_{j,t} + D_{j,t}}{NA_{j,t-1}}$$

$$R_{m,t} = \log e \frac{I_t + D_{it}}{I_{t-1}}$$

$$R_{f,t} = \log e (1 + r_{f,t})$$

Where

$R_{j,t}$ = The monthly continuously compounded rate of return of the jth unit trust during the month t.

$NA_{j,t}$ = The NAV per unit for unit trust j at the end of month t.

$D_{j,t}$ = The dividend per unit paid by unit trust j during month t

$R_{m,t}$ = The estimated monthly continuously compounded rate of return on the market portfolio m for month t.

I_t = Level of Emas Index at the end of month t.

DI_t = Estimate of dividends received by the market portfolio m in month t (obtained from Total Return Table from Bloomberg)

$R_{f,t}$ = The monthly continuously compounded risk free rate of interest for month t.

$r_{f,t}$ = The yield to maturity rate of 90 day Malaysia Treasury Bill for month t as the proxy for the riskless rate of interest.

$$\text{Sharpe Index} = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{\text{Mean Return } j - \text{Mean Risk Free}}{\text{Standard Deviation of } j \text{ Return}}$$

The Sharpe Index (SI) is found to be biased by Miller and Gehr. The bias is found to be a function of the number of return interval (K) in the evaluation period and this is corrected by Jobson and Korkie using Adjusted Sharpe Index (ASI).⁵

$$\text{ASI} = \text{SI} (K/(K + 0.75))$$

3.2.3.2 Risk Measurement

Two methods are used to measure risk. Firstly, using the standard deviation of historical returns. The standard deviation basically indicates stand-alone risk in which the smaller the standard deviation, the tighter the probability distribution and accordingly the lower the risk of a fund.⁶

$$\sigma_{jn} = \left[\sum_{t=1}^N \frac{(R_{j,t} - \bar{R}_j)^2}{N - 1} \right]^{0.5}$$

- $R_{j,t}$ = Rate of return of the jth unit trust at time t
- \bar{R}_j = Mean of the rate of return for the jth unit trust
- N = Number of observation

The second method of measuring the risk is by using beta coefficient (β_j) of the unit trust. The beta coefficient is obtained from the slope of characteristic line (regression line). This line is obtained by regressing the monthly returns of a unit

trust with respect to the monthly returns of the market portfolio m . The regression coefficient, β (the beta coefficient), is a market sensitivity index in which it measures the relative volatility of a given fund versus the average stock, or "the market". The tendency of an individual fund to move with the market constitutes a risk because the market does fluctuate and this fluctuation cannot be diversified away.

$$R_{j,t} = \alpha_j + \beta_j R_{m,t} + e_{j,t}$$

Where

- α_j = Regression intercept
- β_j = Slope of characteristic line
- $R_{j,t}$ = Return on unit trust in month t
- $e_{j,t}$ = Regression's unexplained residual return in month t ,

Although the "bye eye" approach is useful for visualizing what the beta concept is all about, an in-depth understanding and efficient application of the concept requires the use of statistics. Basic statistics courses demonstrate that the following equation can be used to calculate the slope of any simple regression line, and this formula is also programmed into the statistical functions on computers:

$$\beta_j = \frac{\text{Covariance Between Fund } j \text{ And The Market}}{\text{Variance of Market Returns}}$$

$$= \text{Cov}(R_j, R_m) / \sigma_m^2$$

$$= \frac{r_{jm} \sigma_j \sigma_m}{\sigma_m^2}$$

$$= r_{jm} \left(\frac{\sigma_j}{\sigma_m} \right)$$

Thus, a fund's beta, hence its market risk, depends on (a) its correlation with the stock market as a whole, r_{jm} and (b) its own variability, σ_j , relative to the variability of the market, σ_m .⁷

3.2.3.3 Degree of Diversification of Unit Trust

The degree of risk diversification is measured by the coefficient of determination, R^2 of the above regression equation. Since the benefit of investing in unit trust is risk reduction by holding a large number of securities, the higher the diversification the better the unit trust is. The closer the R^2 value to 1.0 represents the higher the degree of diversification. The R^2 is theoretically the proportion of the total variance of the returns of a portfolio explained by the market portfolio.

Besides, R^2 is also computed by using equation: ⁸

$$R^2 = 1 - \frac{\sum e_i^2}{\sum m_i^2}$$

Where $\sum e_i^2$ The residual sum of squares (RSS) or residual or unexplained variation of the return of market portfolio about the regression line.

$\sum m_i^2$ The total variation of the return of market portfolio, which is called total sum, squares (TSS).

3.3 VALUATION OF A UNIT TRUST FUND

The valuation of the funds and the determination of selling and buying prices for units are carried out at least once on each business day. Investment of a fund is valued at market value or a value that is representative of its market value. In a situation where there is no market value publicly available or where the use of quoted market value is not appropriate, investments are valued at fair value determined in good faith by the management company, verified by the approved company's auditors and approved by the trustee.

Valuation for unquoted securities is based on fair value as verified by the auditors and approved by the trustee. Accordingly, the investment manager adopts the Bank Negara indicative rates as well as the market pricing for such securities when valuing the unquoted securities.

For unquoted Fixed Income Securities issued by Malaysian corporations and rated by Rating Agency of Malaysia, the securities are valued at cost adjusted for amortization of any premium or accretion of discount over their par values at the time of acquisition. And in circumstances where the market rate of return changes, the value of the securities are adjusted to reflect its fair value using the Net Present Value Method. Surplus or deficit on revaluation of the unquoted Fixed Income Securities is transferred to the Investment Fluctuation Reserve.

3.3.1 Computation of Net Asset Value

The Net Asset Value (NAV) of a fund is determined at the end of each business day at the close of KLSE at 5.00 p.m. It is the total value of all investments and cash held by the fund including income derived by the fund which has not been distributed to unit holders, minus any amount owing or payable in respect of the fund including any provisions that the trustee or the manager consider necessary

to be made, for example, a provision on investment loss likely to occur in the future which cannot be fairly determined.

An illustration on how to determine NAV is shown as follows:

	RM
Current Investment Portfolio	140,000,000.00
Add:	
Cash (uninvested)	30,000,000.00
Add/ Less:	
Assets/ (liabilities)	<u>20,000,000.00</u>
Net asset Value of the Fund	<u>190,000,000.00</u>
Units in Circulation	200,000,000 units
Therefore, NAV/unit	<u>RM 190,000,000.00</u> 200,000,000 units
	<u>RM 0.9500</u>

3.3.2 Computation of Selling Price

To determine the Selling Price, a fund manager imposes an entry fee between 2% to 10% of the NAV per unit. It is based on the NAV per unit in the fund as at the next valuation point after the request for units is received by the management company (forward pricing). Then the fee is added to the NAV of a unit and adjusted upwards to the nearest 1 sen. The following example shows how selling is calculated:

	RM
NAV/unit	0.9500
Service Charge 5%	<u>0.0475</u>
Selling Price	<u>1.0000</u>

Thus, from an investment of RM 5,000.00 at the selling price of RM 1.00 per unit, an investor is allotted with 5,000 units.

Units allotted is calculated as:

$$\frac{\text{RM5,000.00}}{\text{RM 1.00}} = 5,000 \text{ units}$$

3.3.3 Computation of Buying (Repurchase/Redemption) Price

The repurchase price for units is based on the NAV per unit in the scheme as at the next valuation point after the request for repurchase is received by the management company (forward pricing). The manager does not charge a repurchase fee.

For example:

NAV/ unit	0.9500
Less:	
Repurchase Charge	<u>(0.000)</u>
Buying Price	<u>0.9500</u>

Therefore, when a unit holder redeems 2,000 units at the Buying Price of RM0.95 per unit, he/she shall receive proceed of redemption of RM 1,900.00.

$$2,000 \text{ units} \times \text{RM } 0.95 = \text{RM } 1,900.00$$

3.3.4 Management Expenses

The following are fees and expenses to be paid out of the fund: -

1. Annual Management Fee, in which a manager shall be entitled to and shall receive:
 - a. An entry fee of 2% to 10% on the Net Asset Value of a unit payable by investors as determined by the manager from time to time; and
 - b. Annual management fee not exceeding 1.5% per annum of Gross Net Asset Value of the fund divided by 365 days and accrued daily.

2. Annual Trustees' Fee, in which they shall receive a fee of 0.1% per annum of the Gross Net Asset Value of the fund divided by 365 days and accrued daily.
3. Trustees' expenses⁹ (e.g. foreign custodian services incurred);
4. Commission/ fees paid to brokers in effecting dealings in the investments of the respective fund;
5. Tax and other duties charged on the respective fund by the government and other authorities;
6. Fees and other expenses properly incurred by the auditors appointed for the funds;
7. Fees for valuation of any investment of the respective fund by independent valuers for the benefit of the fund;
8. Costs incurred for the modification of the deeds other than those for the benefit of the management company; and
9. Costs incurred for any meeting of the unit holders other than those convened by, or for the benefit of, the management company.

3.3.5 Management Expense Ratio

All of the above fees and expenses can then be captured and measured under the Management Expense Ratio (MER). The MER, therefore, represents the fees and expenses involved in running a fund, which are deducted from the fund's income. It also expressed as a percentage of the average NAV of that particular fund. A fund's MER is thus calculated by dividing the total annual management expenses of the fund with its average fund size in NAV terms. The MER indicates the total amount that has been charged to the fund to meet expenses and is calculated annually as at the financial year-end.

$$\frac{\text{Fees + Recovered Expenses Incurred By The Fund For The Year} \times 100}{\text{Average Fund Size}}$$

Example:

The total expenses incurred by a fund for a financial period was RM 3.00 million and its average fund size was RM 175.00 million. The MER of the fund is then calculated as follows:

$$\frac{\text{RM 3.00 million}}{\text{RM 175.00 million}} \times 100$$

$$= 1.71\%$$

This means that the fund carries an expense of RM 1.71 for every RM100.00 or RM0.0171 (1.71 sen) for every RM 1.00 of the average net asset of the fund involved during that financial year. The MER plays as a comparative indicator of the expenses borne by one fund relative to other fund.

Endnote

¹ Aw Mee Wah (1997), **"Measuring Unit Trust Fund Performance Using Different Benchmarks"**, MBA Project Paper, University of Malaya, p74

² Mohd Ariff, Shamser Mohammad and Annuar Md. Nasir (1998), **"Stock Pricing In Malaysia"**, Serdang, UPM Press, p 212

³ Miller, R.E and Gehr, A.K (1978), **"Sample Size Bias & Sharpe's Performance Measure: A Note"**, Journal of Financial & Quantitative Analysis, Vol42, April, pp 167-247

⁴ Jensen, Michael C. (1968), **"The Performance of Mutual Funds In The period 1945-1964"**, Journal Of Finance, Vol 23, No2, May, pp 389-416

⁵ Jobson, J.D, Korkie, B.M.,(1981), **"Performance Hypothesis Testing With The Sharpe And Treynor Measures"**, Journal of Finance, Vol36, No.4, pp 889-908

⁶ Brigham Eugene F., Gapenski Louis C. and Ehrhardt Michael C.(1999), **"Financial Management"**, United States, Dryden, p 164

⁷ *ibid*, pp 218-219

⁸ Damodar Gujarati (1999), **"Essentials of Econometrics"**, United States, McGraw Hill, pp 170-173.

⁹ Expenses associated with the management and administration of the Fund, such as general overheads and costs for services expected to be provided by the Management Company, will not be charged to the Fund. RHB Master Prospectus (2000/2001), prepared by RHB Unit Trust Management Berhad, p 45