INVESTOR'S FORTUNE AND UNIT TRUST RATINGS

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ABSTRACT

This study examines the usefulness of rating information supplied by Lipper using a sample of 68 Malaysian unit trust funds from December 2000 to November 2010. Four performance measures were used namely the Sharpe ratio, Treynor ratio, Jensen's alpha, and Fama and French 3-factor model. Overall, the study provides evidence unit trusts underperformed the market index and risk free rate in 3-year, 5-year, and 10-year investment horizons except for the highest rated funds which were able to provide positive returns. The test on performance differential between funds in each rating categories shows that the highest rated funds, second to highest and third to highest significantly outperformed the lowest rated funds especially in a longer investment horizons. This result indicated that Lipper rating system is rather useful in identifying the lowest to highest performance funds.

Keywords: Unit trusts; Rating; Performance

ABSTRAK

Penyelidikan ini bertujuan untuk menguji kegunaan maklumat penilaian yang disediakan oleh Lipper menggunakan sampel sebanyak 68 unit amanah Malaysia dari Disember 2000 hingga November 2010. Empat pengukur prestasi digunakan iaitu nisbah Sharpe, nisbah Treynor, Jensen alpha, dan Fama-French 3-faktor model. Secara keseluruhan, kajian ini memberikan bukti bahawa unit amanah tidak dapat mengatasi prestasi indeks pasaran dan pulangan bebas risiko dalam tempoh masa pelaburan selama 3 tahun, 5 tahun, dan 10 tahun kecuali unit amanah yang mendapat penilaian yang tertinggi atau dikenali sebagai 'Lipper leaders' yang dilihat mampu memberikan hasil yang positif. Ujian terhadap perbezaan prestasi antara saham amanah dalam setiap kategori penilaian menunjukkan bahawa unit amanah yang dinilai tertinggi, kedua tertinggi dan ketiga tertinggi secara signifikan mengatasi prestasi unit amanah nilai terendah terutama dalam jangkamasa panjang. Keputusan ini menunjukkan bahawa sistem penilaian oleh Lipper agak berguna dalam mengenalpasti prestasi unit amanah yang terendah dan tertinggi.

Kata kunci: Unit amanah; Penilaian; Prestasi

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LIST OF ABBREVIATIONS

SMB	Small minus big
HML	High minus low
REITs	Real estate investment trusts
US	United States
SC	Security Commission of Malaysia
FIMM	Federation of Investment Managers Malaysia
EPF	Employees Provident Fund
ETP	Economic Transformation Program
NKEAs	National Key Economic Areas
MPT	Modern Portfolio Theory
NAV	Net asset value
UTODAY	Unit Trust Today Magazine
BM	Bursa Malaysia
FTSE	The Financial Times and the London Stock Exchange
MSCI	Morgan Stanley Capital International
MGS	Malaysian Government Securities
S	Sharpe ratio
T	Treynor ratio
R_i	Return of fund i
Rm_t	Market return at period $_t$
RFR	Risk free rate
T-stat	T-Statistics

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Today, unit trusts or mutual funds have become one of the popular investment alternatives that could offer attractive and promising returns to investors. There are several types of unit trust which include balanced funds, fixed income funds, equity funds, real estate investment trusts (REITs), and money market funds. Both retail and institutional investors use these alternatives as part of their portfolio composition. They will select a particular type of unit trust that serve their preferences or investment objectives. Normally, investors who are adequately informed made their selection criteria based on past, current, and expected future performance of such funds which in turn increased the need for performance evaluation. Furthermore, the growing popularity of unit trusts as an investment alternative to investors has put an additional weight on funds performance evaluation. As such, portfolio performance evaluation has become one of the dynamic academic studies that have been long documented and evolved in finance field. Consequently, there were many performance measurements have been developed, innovated, and employed in many studies conducted across the globe in order to examine funds performance.

Regardless of the studies conducted by researchers that could help investors to select the right unit trusts (profitable funds), there is another source of information that is publicly

available from independent research agencies that provide unit trust' ratings based on their own systematic methodology. These agencies will analyze the historical performance of unit trusts to establish and to provide ratings information for investors. As for Malaysian unit trust industry, Lipper is one of the ratings suppliers beside Morningstar. In fact, Lipper Leader also claimed in their website that it is recognized as the global leader in supplying fund information, analytical tools, and commentary. Lipper's fund data and analysis also reach millions of investors everyday through newspapers, financial publications and the internet.

Ratings are convenient source of information to the investors as their reference before committing their money into any funds. For instance, a study by Gerrans (2004) shows that investors (Australian) used ratings to make their investment decisions. Practically, many investment management companies use ratings as promotional tools for their managed funds to attract potential investors. Additionally, Del Guercio and Tkac (2001, 2008) reveal that ratings influence the flow of money into funds. Despite the usefulness of ratings to the investors, its reliability is somewhat questioned as rating is primarily a measure of past performance where funds are ranked with no predictive of future performance (Del Guercio and Tkac, 2001). Therefore, this study will try to examine the performance of unit trusts that is highly rated (known as Lipper Leaders) by Lipper Rating system by using the Sharpe ratio, Treynor ratio, Jensen's alpha, and Fama-French 3-factor model. The outcome of this study could then be used to confirm whether or not it matches the ratings of Lipper for Malaysian unit trusts' investors. To date, there

is no attempt to study and to compare investment management company's rating with a rating coming from performance measures that are scientifically modelled.

Likewise, in term of unit trusts performance evaluation, most of the studies conducted in Malaysia (Shamser and Annuar, 1995; Leong and Aw, 1997; Fauziah and Mansor, 2007; Fikriyah et al., 2007; and Low, 2007) mainly concentrated on the conventional portfolio performance measures (Brown & Reilly defined them as composite portfolio performance measures – e.g. Sharpe index, Treynor index, Jensen's alpha, and information ratio) and little concentration was given to the Fama-French three-factor model. Therefore, this study will utilized the three factor model as an additional measure to evaluate unit trust performance. This performance measure is not only useful to evaluate unit trust performance but also could determine fund risk exposure to size factor as well as the investment style of fund in value and growth stocks (Lai and Lau, 2010).

1.2 Problem Statement

The notion of quality fund could be defined as fund that is well managed, with proper administration, decision processes, and industry or sector experience which in turn will generate an above average return as compared to their peers (Gerrans, 2006). Generally, a quality fund is defined as the one that outperforms its benchmark set by the investment management company. Furthermore, as noted by Gerrans (2006), the rating could provide an inference of a positive relationship of expectation of funds' future performance. This means that funds that are being rated as leaders will continue to perform better in the future relative to their peers. Meanwhile, funds with the lowest rating are associated with poor performance in the future. Khorona and Nelling (1998) provide evidence from the US that funds with higher rating performed substantially better than lower rated funds. They also reveal that highly rated funds are associated with higher risk-adjusted performance. This shows that fund rating system provided by independent research agencies has the ability to examine huge number of funds (in US market) and to identify quality funds among them. However, what if fund market in a particular country is found to deliver unattractive returns to investors as evidenced in Malaysia. This could raise an issue of the effectiveness and capability of rating system in identifying quality funds. Furthermore, when it comes to the emerging market, the fund evaluation process must recognize and integrate the unique characteristics of emerging market. Bekaert et al. (1997) reveals that the stock market in emerging markets have three different market characteristics which is high average returns, high volatility and low correlations both across the emerging markets and with developed markets.

In Malaysia, unit trust industry is relatively small as compared with other developed countries such as the US and Europe. As at 31st December 2010, the total number of unit trusts in Malaysia is 584 funds (Security Commission of Malaysia). The historical performance of Malaysian unit trusts did not provide much indications of their advantages as evidenced from previous studies. Many studies that have been conducted in Malaysia showed that on average Malaysian unit trusts underperform the market index and risk-free rate (Shamsher & Annuar, 1995; Leong and Aw, (1997); Fauziah & Mansor, 2007; and Low, 2007. The low performance of unit trusts in Malaysia thus raise to the issue of whether funds rating company such as the Lipper could identify leader funds accurately or not. If the ratings supplier deliver inaccurate information, investor may suffer losses. For instance, the Federation of Investment Managers Malaysia (FIMM) has been called to hold a dialogue with Employees Provident Fund (EPF) to clarify the reported RM600 million losses by EPF members who invested in unit trusts (FIMM, 2006).

The issue remains as to the accuracy of funds rating company's recommendation on the performance of unit trusts. Are leader funds that are highly rated by Lipper provide a higher and consistent rate of returns and possess an outstanding ability in preserving capital value relative to their peers? Ideally, there should be a significant difference between the performance of leader funds with the low rated funds, whereby leader funds should demonstrate superior performance and low rated funds are associated with inferior performance. In Blake and Morey (2000) studies, they show that there is a weak evidence to support the ability of five-star funds to outperform four or three-star funds.

Their study use the data from Morningstar (US) ratings. As noted by Füss et al. (2010) that "regardless of the measurement process, the outcome has a value component that distinguishes between high- and low-quality funds". However, Del Guercio and Tkac (2001) argued that such measure is calculated ex-post. Hence fund ratings were assigned based on past performance. Furthermore, both Lipper and Morningstar stated that their rating system is only to provide investors perspectives for making informed investment decisions and not to predict future performance.

It should be noted that different ratings agencies use different method in determining fund ratings. Consequently, a particular fund might receive five-star ratings from a particular ratings agency but it might also receive four, three, or even two ratings from another ratings agency (e.g. OSK-UOB Smart Income Fund is rated three-star by Morningstar Asia but receive leader fund status or five-key by Lipper Leader). Additionally, Morey and Morey (1999) noted that "many industry rating approaches use subjective weights to integrate fund performances over different time horizons that can give rise to quite different ratings, depending upon the relative importance assigned to different horizons".

While there are many literature found on the performance evaluation of unit trusts in Malaysia, there was hardly an exploration concerning unit trusts ratings*. Additionally, the Fama-French three-factor model was rarely employed for fund performance evaluation. Hence, there is a need to investigate the funds ratings by looking into the performance of Malaysian unit trust funds based on rating provided by Lipper Leader Rating system.

1.3 Research Questions

From the problem statement, this study will address the following research questions:

1. Does highly rated funds exhibit a significant risk-adjusted performance?
2. Are there any distinctive performance differential among funds based on their rating category?
3. Does Lipper Leader ratings system provide a useful source of information for investors in funds selection process?

* According to the author's knowledge

1.4 Research Objectives

The research questions developed in the earlier part of this study led to the following research objectives:

1. To examine the risk-adjusted performance of highly rated funds.
2. To compare the performance between leader funds, four-rated, three-rated, two-rated, and one-rated funds.
3. To determine the usefulness of Lipper Leader ratings system in providing information to investors.

1.5 Significance of the Study

It is hoped that this study will provide a useful source of information for potential investors looking for appropriate funds that suit their needs. By conducting this study, it will inseminate the investors and portfolio managers with useful knowledge in determining the trustworthiness of ratings information. If the ratings information supplied by Lipper is found reliable in this study, it would help the investors to make investment decision wisely without involving any intensive and time consuming analysis in order to find the right funds. The results from this study would also enable students, academicians, and society at large to increase their knowledge regarding unit trusts performance; Hence, partly contributing to the achievement of the government's objective in the Economic Transformation Program (ETP) which is to spur the growth of a nascent wealth management industry. This would help to spur the growth of one of the National Key Economic Areas (NKEAs) which is the financial services industry. In addition, the results could also help the government to take an appropriate action towards the issue brought forward in this study in order to stimulate the growth of unit trusts industry.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter addresses on the literature review needed to support the study, particularly the underlying theory and empirical evidences of portfolio (fund) performance evaluation in relation to funds ratings. The associated hypothesis also will be developed based literature extracted from the previous studies.

2.2 Modern Portfolio Theory

In portfolio management, the need to measure a particular portfolio performance must not focus on return only but also to integrate other fund components that determine such return, either resulted in positive or negative return. Because of this, the need to measure portfolio must focus both on risk and return. The equal importance of risk relative to return hence induce academicians to develop several portfolio performance models which quantify both risk and return (e.g. Treynor ratio, 1965; Sharpe ratio, 1966; and Jensen's alpha, 1968). However, person that responsible to provide landmark research in dealing with portfolio risk and return is Harry Markowitz in 1952. Brown and Reilly (2009) noted that "the basic portfolio model was developed by Harry Markowitz (1952, 1959), who derived the expected rate of return for a portfolio of assets and expected risk measure". This popular theory in finance is known as Modern Portfolio Theory (MPT) and because of his landmark research, Harry Markowitz won a Nobel Prize in 1990.

MPT allows investors to estimate their portfolio expected risks and returns. In his work, he demonstrated how to combine assets effectively to become diversified portfolio, with reduced risk and enhanced return. This can be done by combining assets with different price movements. Overall, MPT can be understood as when combining uncorrelated assets to develop a diversified portfolio, it will generate the highest returns with the lowest level of risk.

2.3 The Important of Fund Ratings

2.3.1 Introduction

The growing effectiveness and usefulness of information convey to investors recently has made the unit trusts industry become more popular among investors. As at October 2010, the net asset value (NAV) of unit trusts in Malaysia represents 19% of the Bursa Malaysia market capitalization. Additionally, the industry is still expected to possess strong growth potential in the future given the favourable economic condition of Malaysia. The growth and popularity of the industry thus motivate the investigation and performance analysis of unit trusts by independent research agencies in order to provide useful information by way of recommendations and ratings to investors. Although there are many studies have been conducted to examine the information content of recommendations or ratings, none have been found covering the Malaysian unit trusts. Therefore, given the limited literature in Malaysia, this study will emphasized and discussed other studies originated outside of Malaysia. First, related literature on stock and fund recommendations will be discussed. This is followed by explanation on the usefulness of fund ratings and performance.

2.3.2 Stock and Fund Recommendations

Many investors use recommendations made by profesional research agencies or analysts in their investment decisions. Gerrans (2006) noted that "there are investors who make a living from recommendations to buy and sell securities". In fact, many studies have been done in examining the usefulness of investment recommendations (Desai and Jain, 1995; Mathur and Waheed, 1995; Sant and Zaman, 1996; Ferreira and Smith, 1999; and Hirschey et al., 2000) or fund recommendations (Sawicki and Thomson, 2000) that are available through the internet, printed media, newsletters, and television. For instance, in relation to stock recommendations, Mathur and Waheed (1995) examined the behaviour of stock prices of firms that were positively mentioned in the Business Week. This information is relatively seen to investors either as rumours or recommendations made by the analysts or brokerage houses that somewhat could contain useful information. Their result reveal that investors react positively as significant abnormal returns recorded immediately before and after the publication date. This shows that investors response positively to favourable information which in this case the stock recommendations that appeared in the magazine. This suggest that they make use of such recommendations to make investment decisions. This finding is consistent with the work of Stickel (1995), Womack (1996), Sant and Zaman (1996), Ferreira and Smith (1999), and Barber et al. (2001).

A study by Barber et al. (2001) provides conclusive evidence that investors could gain abnormal returns when they bought approved (favourable) stocks and short sell disapproved (unfavourable) stock even after controlling for size, book-to-market equity, price momentum, and market risk. They also show that investors could gain more profits if they frequently rebalance their portfolio (active portfolio strategy) based on recommendations made by analyst. However, such results are not consistent with the strong-form efficient market hypothesis and definition of efficient capital market by Fama (1970, 1991) where investors could obtain abnormal returns using publicly available information of stock recommendations by the analysts or brokerage houses.

In terms of managed funds, there is a limited number of literature on the information value of fund recommendations provided by independent research agencies. A study by Sawicki and Thomson (2000) in this area provide a different perspective of how investors should look and digest such information. Sawicki and Thomson (2000) attempt to investigate the performance of approved funds that were believed to have superior quality and expected to perform well in the future made by leading research companies in Australia using six years data from 1989 to 1995. They noted that investment advisers rely heavily on information they get from subscribed publications of research companies before giving any recommendations of mutual funds to any individual or retail investors. Their main objective was to seek if there was a significant difference between the performance of approved funds with disapproved funds. Their

results were different from the reported findings on stock recommendations. They found that there was no significant difference between the performance of approved with disapproved funds. Sawicki and Thomson (2000) concluded that recommendations made by research companies would not provide much help to the Australian investors in selecting the best funds.

Another view is that analyst or broker recommendations could also give valuable information to individual or retail investors and fund managers. Comerton-Forde et al. (2010) noted that "most funds employ their own in-house analysts to provide private research coverage of stocks. In addition, funds themselves have access to company management in the same way that sell-side research analysts do. The ability of equity fund managers to conduct their own private research, and possibly obtain information from company management, suggests that fund managers may be informed". However, in relation to trading activity of funds managers, there were evidences showing that funds managers did use and rely on broker recommendations. A study by Chan et al. (2005) examined the association of herding of mutual funds with the availability and quality of information of analysts' earnings forecast. Herding refers to a group of investors imitate each other strategy with regard to trading into or out of the same securities over some period. They found that the extent of herding of fund managers was greater when there was an increase of information uncertainty about analysts' forecast. This result suggests that fund managers did use and analyze the information of analysts' forecast to make their buying and selling

decisions of securities to be included in their portfolio. Another study by Brown et al. (2009) also provides evidence that fund managers traded in response to the information released by analysts. However, Kacperczyk and Seru (2007) revealed that the extent of using such information depend on the managerial skills of fund managers (e.g. stock-picking ability). They found that skilled managers who relied less on public information tend to generate significantly higher returns due to superior private information and superior stock-picking abilities.

From the literature and evidences provided in the past studies, it could be seen that the broker or analyst recommendations on securities especially for stocks do influence the decision made by individual or institutional. Apparently, there is no evidence found in term of information value of fund recommendations. Instead, Sawicki and Thomson (2000) revealed that fund recommendations were not helping investors to find the best funds. However, this is only in the context of Australian fund industry. The results would probably be different if the study is being conducted in other countries, or if a different sample from other independent research agencies is utilized or different performance measures are used.

2.3.3 Ratings and Fund Performance

In recent years, there has been a growing body of literature in finance concerning fund ratings (Khorana and Nelling, 1998; Detzel and Gagne, 1999); Loviscek and Jordan, 2000; Blake and Morey, 2000; Morey, 2002; Lashgari and Wahab, 2003; Gerrans, 2004; Morey, 2005; Gerrans, 2006; Morey and Gottesman, 2006; Kräussl and Sandelowsky, 2007; Faff et al., 2007; Del Guercio and Tkac, 2008; and Füss et al., 2010). Most of the literature provide evidences from the US, Europe, and Australia but none in the Southeast Asean environment including Malaysia. Furthermore, most of the literature used Morningstar rather than Lipper Rating System in analyzing fund ratings. Although previous literature only focus on Morningstar rating, it could somehow provide a basis of comparison with Lipper Rating System.

Fund ratings are somewhat similar to the fund recommendations discussed in the previous section. By looking into ratings, it can be interpreted as providing investors recommendation to buy highly rated funds and cautioning them on low rated funds. It is noted that ratings is considered as an important source of information to investors and financial planners in their selection criterion (Gerrans, 2004). It is also understandable that the fundamental motive of fund ratings is to provide a guide to quality and expected future performance of the rated funds (Gerrans, 2006). In order for ratings agencies to deliver quality fund ratings, the performance measures used to evaluate fund performance therefore

must be superior and comprehensive to be able to differentiate and determine which funds are fitted or qualified for each rating categories. Gerrans (2006) noted that "the performance measures used by ratings agencies should be enhanced and not detract from many performance measures which are available, easier, and cheaper in order to produce information that content a predictive value of future performance".

One of the earlier studies on fund ratings is from the work of Khorana and Nelling (1998). In their study, they investigated the determining factors that were affecting Morningstar (US) mutual fund ratings, the predictive ability of the ratings system, and the performance persistence of highly rated funds. Khorana and Nelling (1998) found that highly rated funds were associated with higher risk-adjusted performance, greater degree of diversification across asset classes, lower systematic risk, and longer tenures of fund managers. Additionally, Blume (1998) also documented that funds with highest Morningstar (US) ratings were likely to be funds with short history (young funds) rather than long history (seasoned funds). However, another study by Morey (2002) contradicts with Blume's results. Morey (2002) revealed that Morningstar ratings system exhibit age bias where he found that the seasoned or older funds were significantly receiving higher overall ratings than the middle age and young funds. Morey (2002) argued that the results were due to the Morningstar weighted rating system and not because of survivorship bias. Additionally, Adkisson and Fraser (2003) also noted that Morningstar ratings exhibit age bias. Adkisson and Fraser

(2003) said that the age bias had three sources or factors which were the weighting system, the market climate or economic condition during the evaluation period, and the size of fund.

The study of Khorana and Nelling (1998) also provides evidences that predictive ability and performance persistence of mutual funds existed in Morningstar ratings. They showed that performance persistent of fund ratings was statistically significant in short-term horizon and the performance of highly rated funds were substantially better than lower-rated funds. Khorana and Nelling (1998) concluded that Morningstar ratings did provide useful information to investors and helped them in fund selection process. Additionally, other studies by Blake and Morey (2000), Lashgari and Wahab (2003), Gerrans (2006), and Kräussl and Sandelowsky (2007) also supported the results of Khorana and Nelling (1998). Blake and Morey (2000) showed that Morningstar ratings have predictive ability especially for poor future performance but weak in predicting superior performance of highly rated funds. Blake and Morey evaluated the performance of US domestic equity funds from using Morningstar data from 1992 to 1997. Their results showed that funds with the ratings of less than three-star were having worst future performance.

Another study by Lashgari and Wahab (2003) added to the literature and confirmed the predictive ability of Morningstar ratings by investigating the effect of changes in fund ratings on the future performance of the US growth funds from 1996 to 1999. Lashgari and Wahab (2003) revealed that Morningstar ratings did appear to have predictive ability especially for downgraded funds, but failed to predict future performance of upgraded funds. From their results, Lashgari and Wahab (2003) noted that investors can use the ratings provided by Morningstar to limit their losses but not to formulate strategies to be able to generate excess returns. Gerrans (2006) also reported the same evidence using the Australian data of 5200 equity funds from 1996 to 2001. Gerrans (2006) showed that there was no evidence found to support the view that five-star funds will outperform lower rated funds in subsequent period. On the other hand, Morey (2005) provided evidence that after three years a fund being rated five-star, the performance of such fund severely deteriorated. Morey (2005) suggested that the investors should be wary in using five-star rating as their investment strategies to generate excess returns in the future. Another study by Loviscek and Jordan (2000) also provide an evidence that investors could not rely on five-star rating. They examined fund ratings by forming five portfolios based on Morningstar ratings of ten-year performance and five-star general equity funds. Loviscek and Jordan (2000) constructed their portfolios on a yearly basis from 1989 to 1993 by selecting the top five holdings (stocks that constitute largest percentage of funds' total asset) of each ten-year performance and five-star funds. Out of five portfolios, only two portfolios clearly beat the market

index (S&P 500). Due to this, they concluded that the evidence was not strong enough to recommend stock selection to the investors based on five-star Morningstar rating.

As a consequence, Morningstar had revised its rating system in July 2002 due to the increasing critique on the predictive ability of the system as well as the changing market demands. In a more recent study by Kräussl and Sandelowsky (2007), they were motivated to examine the rating system prior to and after the effective date of July 2002. Their study covered the US data of 25,202 funds from 1995 until 2005. The findings indicated that prior to July 2002, the rating system was good at predicting poor performance funds. This supported the results from previous studies. Additionally, they also revealed that the older rating system was superior than the new rating system in term of predictive ability. The new rating system could not predict a significant difference of future performance between five-star and one-star funds. However, a study by Morey and Gottesman (2006) reported evidence against the findings from Kräussl and Sandelowsky (2007). Morey and Gottesman (2006) showed that the new Morningstar rating system can predict future performance of funds at least within three year from the base date.

Although all these studies supported the predictive ability of Morningstar rating system especially to predict poor future performance funds, many studies also

documented that there was little evidence to support a significant difference between the performance of highly rated funds with the next-to-highest rated funds. Rather, the results reported from several studies were mixed. Khorana and Nelling (1998) provided the findings that the performance of highly rated funds were substantially better than lower-rated funds in the period after receiving the ratings. These results also supported by Morey and Gottesman (2006). Morey and Gottesman (2006) found that there was a significant difference between fund performance even when he compared between two-star funds and one-star funds. Other studies by Blake and Morey (2000) and Morey (2005) reported contradicting results where they found that the performance of five-star funds were about the same with four-star and three-star funds in the US market. Furthermore, Füss et al. (2010) provided that there was no evidence found to support that Morningstar rating system could differentiate between higher-performing funds with medium-performing funds in the German fund market. This result is consistent to those reported by Gerrans (2006) in studying the Australian mutual funds.

As for the inconsistency of results reported earlier, this is possibly due to the evaluation period of the sample (before and after the revision of Morningstar rating system in July 2002). Morey and Gottesman (2006) noted that "the new Morningstar rating system can predict future performance of mutual funds". However, the argument put forward by Morey and Gottesman (2006) was only specific to the US fund market. Furthermore, the contradicting result could also

due to the use of different sample as shown by Gerrans (2006) and Füss et al (2010). For example, a study by Bekaert et al. (1997) revealed that the stock market in emerging markets had three different market characteristics which were high average returns, high volatility and low correlations across the emerging markets and developed markets. It should be noted that most of the literature discussed earlier was on Morningstar and not on Lipper Rating System.

As far as Malaysia is concerned, no study has been conducted to examine the usefulness of fund ratings to investors. Most of the literature were concentrated on examining the general performance of unit trusts. Shamser and Annuar (1995) examined the performance and characteristics of 54 unit trusts by using adjusted Sharpe index and Spearman rank correlation. Their study covered the period from January 1988 to December 1992. The results showed that unit trust returns were below the returns of risk free and market portfolio; This indicated that the degree of diversification of unit trust was below the expectation level and inconsistent across the studied period.

A latter study by Leong and Aw (1997) provided further evidence that Malaysian unit trusts continued to perform worse in the latter period of 1990 to 1999. A sample of 78 unit trusts was used in their evaluation. Their results showed that unit trust were not performing well relative to the market as proxied by the FTSE Bursa Malaysia KLCI and FTSE Bursa Malaysia EMAS index. They also

revealed that unit trusts performed better when the FTSE Bursa Malaysia EMAS index was used as the benchmark. Consistent with the previous findings by Shamser and Annuar, Leong and Aw (1997) also found that unit trusts were not well diversified.

Fauziah and Mansor (2007) further examined the performance of unit trusts by covering a full economic cycle from 1990 to 2001. Their study used various portfolio performance measures namely the Jensen's alpha, adjusted Jensen's alpha, Sharpe index, adjusted Sharpe index, Treynor index, raw return, and market adjusted return. Based on their results, they concluded that the unit trusts had not performed well over the period of study. This indicated that on average the performance of unit trusts were below the market and risk free returns. Additionally, they also found that bond funds relatively outperformed other types of fund and the market return. This was true since the performance was measured using risk-adjusted basis where the bond funds exhibit much lower risk and stable returns as compared to the general equity funds even in the economy crisis period.

Another study by Low (2007) also provided an evidence that was consistent with the previous studies. His objective was to examine the security selection skills and market timing ability of unit trusts. He used the Jensen' (1968; 1969) model, Merton (1981), and Henriksson and Merton (1981) to measure overall

performance of unit trusts from 1996 to 2000. The results showed that the funds provided investors with inferior performance, largely driven by poor market timing ability and not by security selection skills. From the evidences, it could be concluded that unit trusts are not performing well relative to market portfolio and risk free rate in the Malaysian history. The inferior performance of funds thus raise to the issue of the ability and usefulness of fund ratings in assisting investors decision making.

2.4 Hypothesis

The conceptual and empirical perspective from the literature led to the following two (2) hypotheses and the results will be discussed later after they are tested:

H1 : There is a significant performance difference between highly rated funds and the lowest rated funds.

H2: The performance of three-rated, four-rated, and five-rated funds are not significantly different with each other.

2.5 Conclusion

Fund rating has played a significant role in assisting investors to make informed investment decisions. Empirical evidences provided by previous studies showed that rating was useful to investors as it provided information on superior (highly rated) and inferior (lowest rated) funds. However, no study has been conducted this far to examine the usefulness of unit trust rating. Most of the Malaysian studies were focusing on performance evaluation of unit trusts. Hence, this study is implemented to fill the gap.

CHAPTER 3

RESEARCH DESIGN

3.1 Introduction

This chapter comprises of data selection techniques and method used to examine the usefulness of unit trust ratings. An overview of Lipper rating system, sample of the study, and unit trust performance measurement are presented. In addition, it provides a detailed description on the analysis of unit trust ratings supplied by Lipper Leader.

3.2 Data Collection Method

This section generally discussed on the procedure of data collection. Before the sample is identified, an overview of Lipper rating system is briefly explained to provide an understanding of how the rating system work. Once sample is identified, then the data collection process and measurement technique are discussed and presented.

3.2.1 Overview of Lipper Leader Rating System

Lipper Leader rating system analyzes funds against clearly defined investor criteria and compare fund performance within the peers in its group. Funds are ranked against their peers in each group based on five performance measures. However, there are only three performance measures available for Malaysian

unit trusts investors particularly the total return, consistent return, and preservation. Another two which are tax efficiency and expense ratio are not applicable in the context of Malaysia. Performance measure for tax efficiency is only available for the US funds market. Meanwhile, performance measure for expense ratio is not yet available due to the lack of expense data of Malaysian unit trusts. Lipper claimed that these performance measures are matched with the investors' need to make informed investment decision. For instance, investors who seek in building wealth could achieve their objective by investing in unit trusts that have consistent and high returns. Unit trusts are classified and grouped into three categories namely equity fund, bond fund, and mixed asset fund. Lipper Leader updated its rating on a monthly basis and provided the rating based on 3-year, 5-year, 10-year, and an overall period performance. The overall period is calculated using the weighted average of percentile ranks for each of 3-year, 5-year, and 10-year periods. For each measure (total return/consistent return/ and preservation), unit trusts in the top 20% in each group are rated with 5-key and known to be Lipper Leaders. The next 20% will be rated with 4-key, the middle 20% will receive a rating of 3, the next 20% are rated with 2-key, and the lowest 20% are rated with 1-key. Table 3.1 summarized the five rating metrics used by Lipper.

As noted earlier, Lipper Leader rating system analyzed the performance of Malaysian unit trust based on three measures. The first measure for total return only look at the unit trust that provide superior returns (the returns after expenses

and include reinvested dividends) relative to the other funds in similar group without considering the risk factor. A unit trust that receive a Lipper Leader status is the one that provide the best historical raw return. This measure is only attractive for a risk-taker investor. Meanwhile, for a risk-averse investor, the total return measure alone cannot be used to help them to avoid downside risk.

Table 3.1 Lipper Leaders ratings metrics

Lipper Leaders key
Highest **5** **4** **3** **2** **1** Lowest
For each metric: • The top 20% of funds receive a rating of '5' and are known to be Lipper Leaders. • The next 20% of funds receive a rating of '4' • The middle 20% of funds receive a rating of '3' • The next 20% of funds receive a rating of '2' • The lowest 20% of funds receive a rating of '1'

Source: *www.lipperweb.com.*

The second performance measure, which is consistent return provides additional perspective of how investors could use it to avoid downside risk. The measure is used to identify unit trusts that have consistently deliver superior risk adjusted

returns as compared to their peers. This measure is very useful for investors who evaluate unit trust performance based on a year-to-year consistent return. However, investors need to be aware of the volatility of unit trusts' return as they differ according to their group or asset class. Additionally, Lipper had also stated that Lipper Leaders in the consistent return category for a volatile group such as small capitalization equity funds may not be preferred for risk-averse investors especially those with short-term goals. Although the funds are considered as Lipper Leaders and provide consistent returns in comparison to their peers (other funds in a similar category – small capitalization equity fund), they are still regarded as risky and less superior when compared with other funds in another category (different asset classes) such as value equity fund.

The last performance measure provided by Lipper is preservation. The Lipper rating system for preservation identified unit trust that demonstrates superior ability in preserving the capital value. This measure is useful for investors as an additional selection criteria to minimize downside risk if they are not certain with the Lipper Leader's recommendation on total return and consistent return. Hence, based on the rating system it is expected that a unit trust that receives Lipper Leader status for all the three performance measures is one that provides with superior historical performance relative to its peers in the same asset class group.

3.2.2 Sample of Unit Trusts

The sample of unit trusts collected in this study was based on rating information provided by Lipper Leader's website. In Malaysia's unit trusts market, there are two major rating supplier namely Lipper and Morningstar. Rating information from Lipper is chosen because it provides the Malaysian investors with three performance measures (total return, consistent risk-adjusted return, and preservation) while Morningstar only measures risk-adjusted return of unit trusts. Furthermore, Lipper is becoming more popular among Malaysian investors. For instance, the Edge-Lipper Malaysia Fund Award is recognized as a significant event in Malaysian unit trust industry today (Security Commission of Malaysia). In addition, Lipper brand also appears frequently in a magazine such as Unit Trust Today (UTODAY) published by the Federation of Investment Managers Malaysia.

The unit trusts rating for each rating key category is retrieved on 20th December 2010 using the overall period performance. In order to examine the usefulness of Lipper rating system, this study only selected unit trusts that receive the same key rating in all the three performance measures. For example, unit trusts that receive 1-key rating for total return, consistent return, and preservation are considered the lowest performers. On the other hand, unit trusts with a rating of 5-key or the Lipper Leaders are normally the most superior performers. Furthermore, this study also selected unit trusts based on the rating without

taking into consideration the type of funds (either equity, mixed asset or bond funds). This selection process is taken to ensure a larger sample could be identified and included in this study. There were 68 unit trusts that passed the screening process and used as a sample in this study. The number of unit trusts in each rating category is summarized in Table 3.1 and the full list appeared in Appendix.

Table 3.2 Sample of unit trusts in each rating category

Rating	No. of Unit Trust
1	10
2	15
3	12
4	11
5	20
Total	68

Once the sample was identified, the data on net asset value were collected from the Bloomberg Terminal at the Library of Bursa Malaysia. Other data or market benchmark that need to be incorporated into the performance measures such as market portfolio (FTSE KLCI index, EMAS index, FTSE Top 100, MSCI Malaysia Value index, and MSCI Malaysia Growth index) and risk-free rate (Malaysian 3-month T-bill) were collected from Thomson DataStream at the Library of Universiti Utara Malaysia (UUM). Another benchmark index that was also used in this study is Malaysian Government Security index collected from

RAM quant shop MGS Bond index. This study used monthly data that covers 10-year period (if applicable) for each unit trusts from December 2000 to November 2010. This period of study is selected because it covers an economic cycle of 10 years. Furthermore, it is more appropriate because the market would have stabilize after the 1997 Asian financial crisis.

3.3 Portfolio Performance Measures

To measure fund performance, first, the return of unit trust is calculated using the standard procedure of calculating capital gain. The calculation of returns on unit trusts can be expressed as follows:

$$R_{it} = \frac{NAV_{it} - NAV_{it-1}}{NAV_{it-1}} \quad (1)$$

Where:

R_{it} = return of fund $_i$ in period $_t$

NAV_{it} = net asset value of fund $_i$ in period $_t$.

NAV_{it-1} = net asset value of fund $_i$ in period $_{t-1}$.

In order to achieve the first objective of the study, four performance measures are used to examine risk-adjusted performance of leader funds and the other rating. The first performance measure used is Sharpe ratio which is designed to measure the reward-to-variability of a portfolio or fund investment. Sharpe ratio is a measure of excess return per unit of risk of investment asset which in this case is unit trust. It was introduced by Sharpe (1996) and considered to be useful for investors as it could measure fund performance by looking at the amount of risk involved. Although a particular fund could

provide higher returns, it would only be regarded as good investment if there is less risk involved to produce such returns. The Sharpe ratio is calculated as follows:

$$Si = \frac{R_i - RFR}{\sigma_i} \qquad (2)$$

Where:

S_i = Sharpe ratio.

R_i = average return of fund $_i$.

RFR = average risk free rate which is proxied by the 3-month Malaysian treasury bills.

σ_i = standard deviation of returns for fund $_i$.

To further examine unit trust performance, the second measure was introduced by Treynor (1965). The Treynor ratio is almost similar to the Sharpe ratio except for risk measure. The Sharpe ratio uses standard deviation which is a measure of total risk (include systematic and unsystematic risk) while Treynor ratio utilizes the systematic risk component of the portfolio's return in relation to the market portfolio's return (portfolio's beta coefficient). The Treynor ratio can be measures as follows:

$$Ti = \frac{R_i - RFR}{\beta_i} \tag{3}$$

Where:

T_i = Treynor ratio.

R_i = average return of fund $_i$.

RFR = average risk free rate which is proxied by the 3-month Malaysian treasury bills.

β_i = beta coefficient of returns of fund $_i$.

Both the Sharpe and Treynor performance measures are not absolute to measure fund performance rankings because they only produce relative performance rankings (Brown and Reilly, 2009).

The next performance measure utilized in this study is the Jensen's alpha (Jensen, 1968). A major advantage of Jensen's alpha is it is easier to understand and to interpret the results. For example, an alpha value of 0.03 indicates that the fund has generated a return of 3% under the period of evaluation. A formal regression analysis is needed to compute this measure using the following regression model:

$$R_{it} - RFR = \alpha_i + \beta_i (Rm_t - RFR) + e_i \quad (4)$$

Where:

$R_{it} - RFR$ = excess return of portfolio $_i$ in period $_t$.

$Rm_t - RFR$ = excess return of market portfolio proxied by FTSE Bursa Malaysia EMAS index.

α_i = Jensen's alpha to measure portfolio performance.

β_i = beta coefficient of portfolio $_i$.

The alpha value will indicate whether the performance of a portfolio or fund is superior or not. A significant positive alpha imply that a fund has superior performance because of consistent positive residuals. On the other hand, a significant negative alpha indicates inferior performance of fund because of its return is below the expectation of capital asset pricing model that resulted in consistent negative residuals (Lai and Lau, 2010).

The last performance measure used in this study is the Fama-French three-factor model (1993). Fama and French (1993) proposed a microeconomic-based risk factor model to explain the cross section of stock returns. This model is almost similar with the Jensen's alpha and only differs in term of the number of factors included where Jensen's alpha only incorporated one factor and Fama-French included three factors.

$$R_{it} - RFR = \alpha_i + \beta_{i1}(Rm_t - RFR) + \beta_{i2}SMB + \beta_{i3}HML + e_i \quad (5)$$

Where:

$R_{it} - RFR$ = excess return of portfolio $_i$ in period $_t$.

$Rm_t - RFR$ = excess return of market portfolio proxied by FTSE Bursa Malaysia EMAS index.

SMB = difference of returns between small capitalization portfolio and large capitalization portfolio.

HML = difference of returns between portfolio of high book-to-market and low book-to-market ratio.

α_i = alpha value of Fama-French three-factor model to measure portfolio performance.

The SMB factor was designed to capture the size risk while HML distinguished between value (high book-to-market ratio) and growth (low book-to-market ratio) stocks. In the work of Fama and French (1993), the SMB and HML factor were self-constructed. However, this study utilized market portfolios that are readily available in the market to represent the SMB and HML factor. Studies that have used this approach include the work of Gruber (1996) and Gerrans (2006) that used market indices as a proxy for those factors. For SMB factor, this study use the return differential between FTSE BM Small Cap index (proxy for small capitalization portfolio) and FTSE BM KLCI index (proxy for large capitalization portfolio). Meanwhile, the HML factor constitute of the difference of returns between MSCI Malaysia Value index (proxy for high book-to-market ratio stocks) and MSCI Malaysia Growth index (proxy for portfolio of low book-to-market ratio stocks).

In order to fulfil the second objective which is to analyze the difference of risk-adjusted performance between the highly rated and low rated funds, this study follows the work of Budiono and Martens (2009). They noted that the common approaches in the literature to find the performance differential is by regressing return differential of the top (highly rated) and bottom (low rated) deciles funds. This approach could also be adopted to find the difference between the funds in each rating category. As noted earlier, the Sharpe and Treynor ratio could not provide any statistical differences between rating categories.

Therefore, to fulfil the second objective, this paper utilized both of Jensen's Alpha and Fama-French three-factor model to perform this analysis. Hence, equation (4) and (5) could be adjusted into the following equations:

$$R_{5-1,t} = \alpha_i + \beta_1 (Rm_t - RFR) + e_i \quad (7)$$

$$R_{5-1,t} - RFR = \alpha + \beta_1 (Rm_t - RFR) + \beta_2 SMB + \beta_3 HML + e_t \quad (8)$$

Where:

$R_{5-1,t}$ = the return differential between fund with 5-key rating and 1-key rating.

A similar approach as in Equation (7) and (8) is used to see whether there are significance differences among fund rating categories.

4.2 Descriptive Statistics

Descriptive statistics of seven benchmark indices and five portfolios of unit trusts returns constructed based on assigned ratings from Lipper Leader are reported in Table 4.1. The data contain a monthly net asset value of 68 Malaysian unit trusts.

Table 4.1: Summary statistics of benchmark indices and unit trust returns from December 2000 to November 2010

		Average annualized returns (%)	Standard deviation of returns (%)	Maximum (%)	Minimum (%)
FTSE BM EMAS Index		8.65	18.65	13.80	-19.20
FTSE BM KLCI Index		8.76	17.30	12.28	-17.77
FTSE BM Top100 Index		9.32	18.26	13.64	-19.95
FTSE BM Small Cap Index		8.31	25.46	25.91	-15.35
MSCI Malaysia Value Index		11.35	17.41	14.09	-12.89
MSCI Malaysia Growth Index		7.09	20.03	16.49	-24.34
3-Month Malaysian Treasury Bill		2.79	1.63	3.56	1.82
All Maturities MGS Index		2.78	22.53	23.77	-19.16
Fund Rating	1-Key	-4.67	10.65	7.02	-11.90
	2-Key	0.68	13.16	8.75	-11.47
	3-key	4.02	13.08	9.34	-10.91
	4-key	3.74	12.20	9.11	-9.28
	5-key (Lipper Leader)	5.52	12.71	8.87	-8.48

Overall, the average annualized returns (calculated by compounding the average monthly returns for 12 months) of unit trust is lower than the general equity indices but higher than the return of risk free rate and low risk investment vehicle which are proxied by the 3-month Malaysian Treasury bill and Malaysian Government Security (MGS) all

maturities index, respectively. The MSCI Malaysia Value index provided the highest return with a value of 11.35%, which was followed by the FTSE Bursa Malaysia Top 100 Index of 9.32%, FTSE Bursa Malaysia KLCI index of 8.76%, FTSE Bursa Malaysia EMAS index of 8.65%, FTSE Bursa Malaysia Small Cap index of 8.31%, and MSCI Malaysia Growth index of 7.09%.

On the other hand, when a comparison was made among the rated funds, it shows that annualized returns of the highest rated funds (funds with 5-key rating or also known as Lipper Leader) outperform the lowest rated funds (funds with 1-key rating) with a difference of 10.19%. However, the results also show that the 4-key rated funds underperform the 3-key rated funds which contradict to the expectation of common investors. In a sense, the 4-key rated funds should outperform 3-key rated funds. This could probably due to the different investment objective of such funds where 4-key rated funds comprised of funds that generate returns without excessive exposure to risk such as investing in large-value stocks or highly rated fixed-income securities. As reported in Table 4.1, the standard deviation of 4-key rated funds (12.2%) is lower than 3-key rated funds (13.16%). Furthermore, the results also show that the annualized returns of 1- and 2-key rated funds are lower than the 3-month Malaysian Treasury bill rate and the Malaysian Government Security index for all maturities. A possible explanation that could be put forward is probably the nature of asset allocation strategy undertaken by those funds. The allocation of assets of those funds could be mixed of penny stocks and unsecured bonds which in turn will expose funds to the downside risk with lower probability to upside potential.

In term of volatility as measured by standard deviation, the results showed that the highest standard deviation of 25.46% was recorded by the FTSE Bursa Malaysia Small Cap index. This is probably true since the index comprises of small companies stock that were expected to exhibit higher risk as compared to the stock of large or blue-chip companies as proxied by the FTSE Bursa Malaysia KLCI index. Brown and Reilly (2009) noted that the examination of riskiness in small companies was improperly measured due to lack of frequent trading. The infrequent trading of small company will make its stock price relatively stable due to the unchanged or small changes in price over time. Additionally, from the risk and return perspective, investors would not get the appropriate return for the amount of risk they are exposed to when investing in small companies as the market index produces average annualized returns of 8.31% as compared to the market indices return for large companies of 8.76% for FTSE Bursa Malaysia KLCI index (standard deviation of 17.3%) and 9.32% for FTSE Bursa Malaysia Top 100 index (standard deviation of 18.26%).

4.3 Correlation Coefficients of Unit Trust Returns and the Security Market Indices

Pearson's correlation test was used in this study to examine the relationship between unit trust returns and the benchmark indices from the period of December 2000 to November 2010. As reported in Table 4.2, the Lipper rated unit trust returns indicated significant correlations with the returns of FTSE Bursa Malaysia EMAS index, FTSE Bursa Malaysia KLCI index, FTSE Bursa Malaysia Top 100 index, FTSE Bursa Malaysia Small Cap index, MSCI Value index, and MSCI Growth index. Similarly, the results also showed that the market indices were highly related to each other with significant positive correlation coefficients ranging from 0.82 to 1.00. The correlation coefficient between the FTSE Bursa Malaysia EMAS index and the FTSE Bursa Malaysia Top 100 index shows a value of 1 or perfect positive correlation. The perfect positive correlation between those indices is possibly because of the FTSE Bursa Malaysia Emas index comprises the constituents of the FTSE Bursa Malaysia Top 100 and FTSE Bursa Malaysia Small Cap index. On the other hand, the returns of all unit trust portfolios and the equity market indices showed negative correlation with the 3-month Malaysian treasury bill rate and low correlation with the Malaysian government securities all maturities index. This results also consistent with the reported findings by Lai and Lau (2010).

Table 4.2: Correlation coefficients of unit trust returns with benchmark indices

	Emas Index	KLCI Index	FTSE 100	FTSE Small Cap	MSCI Value	MSCI Growth	T-bill	MGS	Fund Returns				
									1-key	2-key	3-key	4-key	5-key
FTSE BM EMAS Index	1.00												
FTSE BM KLCI Index	0.99**	1.00											
FTSE BM Top 100 Index	1.00**	0.99**	1.00										
FTSE BM Small Cap Index	0.87**	0.82**	0.83**	1.00									
MSCI Malaysia Value Index	0.97**	0.97**	0.97**	0.82**	1.00								
MSCI Malaysia Growth Index	0.96**	0.97**	0.97**	0.77**	0.91**	1.00							
3-Month Malaysian T-bill	-0.18	-0.19	-0.19	-0.11	-0.17	-0.18	1.00						
All Maturities MGS Index	0.07	0.09	0.07	0.02	0.10	0.08	-0.13	1.00					
1-Key	0.33**	0.31**	0.31**	0.35**	0.34**	0.28**	-0.12	0.06	1.00				
2-Key	0.46**	0.45**	0.45**	0.44**	0.45**	0.42**	-0.14	0.09	0.73**	1.00			
3-key	0.51**	0.51**	0.50**	0.46**	0.49**	0.49**	-0.10	0.11	0.69**	0.91**	1.00		
4-key	0.46**	0.46**	0.46**	0.43**	0.48**	0.43**	-0.15	0.10	0.73**	0.94**	0.92**	1.00	
5-key (Lipper Leader)	0.47**	0.47**	0.46**	0.46**	0.47**	0.44**	-0.11	0.13	0.73**	0.91**	0.92**	0.93**	1.00

Note: ** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

4.4 Lipper Ratings System and Unit Trust Performance

The results reported in this section are specifically addressed to achieve the stated objectives of the study which are to examine the risk-adjusted performance of highly rated funds, to compare the performance among funds in different rating categories, and to identify the usefulness of Lipper rating system to Malaysian investors.

As reported in Table 4.3, the highest average annualized returns for the 10-year investment period is recorded by fund with 5-key rating of 5.52%. Similarly, the lowest rated fund with 1-key rating is associated with the lowest average annualized return of -4.67%. The results are also consistent with the 5- and 3-year investment horizons where the fund with 5-key (1-key) rating generated average annualized return of 9.41% (-1.03%). However, the returns of 3-key and 4-key rated funds for two investment horizons are rather unexpected where the return of 3-key rating is larger than 4-key rating by 0.28% (10-year period from December 2000 to November 2010) and 0.26% (5-year period from December 2005 to November 2010). As mentioned earlier, this could be due to the different characteristics or asset types between the 3-key and 4-key rated funds.

Overall, the results did show that the returns of leader (5-key rated) funds were much higher as compared to lowest rated (1-key rated) funds for the three investment horizons with a difference of 10.19% (10-year period), 10.44% (5-year period), and 6.45% (3-

year period). Additionally, the 2-key rated funds also showed a considerably higher return than the 1-key rated funds across the three investment horizons with the difference of 5.35% (10-year period), 7.77% (5-year period), and 5.71% (3-year period). However, these results only looked at the raw returns of unit trusts without taking into consideration the associated risk. Therefore, an application of risk-adjusted performance measures was utilized to provide more meaningful results of unit trust performance.

In term of risk-adjusted performance measures, the results showed that the ranking of Sharpe and Treynor ratio are appropriate according to assigned rating where the highest rated fund is ranked first and the lowest rated one is ranked last across all investment horizons. Moreover, both performance measures have identical rankings as reported in Table 4.3. Notably, the inconsistency between Lipper ratings and fund rankings both for Sharpe and Treynor ratio was also observed for 10-year investment horizon which is similar to the inconsistency found on raw returns between 3-key and 4-key rated funds. The results showed that the Sharpe ratio of 4-key rated funds (0.078) was lower than the 3-key rated funds (0.094) for 10-year investment horizon. Similarly, the Treynor ratio for 10-year investment horizon for 4-key rated funds (3.132) was also lower than the 3-key rated funds (3.438).

Table 4.3: Risk-adjusted performance of unit trust based on Lipper Leader rating system for 10-year, 5-year, and 3-year investment horizons from December 2000 to November 2010.

Assigned ratings (year)	Number of funds	Average annualized returns (%)	Standard deviation (%)	Beta	Sharpe ratio	Rank	Treynor ratio	Rank	Jensen's Alpha (%)	Rank	Fama-French 3-factor (%)	Rank
10-year period (December 2000 to November 2010)												
1-Key	6	-4.67	10.65	0.19	-0.700	6	-39.835	6	-0.483*	5	-0.523**	5
2-Key	9	0.68	13.16	0.32	-0.160	5	-6.505	5	-0.324	4	-0.353	4
3-key	3	4.02	13.08	0.36	0.094	3	3.438	3	-0.067	3	-0.044	2
4-key	7	3.74	12.20	0.30	0.078	4	3.132	4	-0.065	2	-0.123	3
5-key (Lipper leader)	7	5.52	12.71	0.32	0.215	2	8.444	1	0.068	1	0.052	1
FTSE BM EMAS Index		8.65	18.65	1.00	0.314	1	5.860	2				
3-month Malaysian T-bill		2.79	1.63	-0.58								
5-year period (December 2005 to November 2010)												
1-Key	10	-1.03	7.79	0.23	-0.510	6	-17.545	6	-0.233	5	-0.246	5
2-Key	14	6.74	12.37	0.39	0.307	5	9.636	5	-0.036	4	-0.013	4
3-key	11	7.33	12.90	0.43	0.340	4	10.180	4	-0.021	3	-0.007	3
4-key	10	7.07	11.67	0.39	0.354	3	10.625	3	-0.005	2	0.015	2
5-key (Lipper leader)	16	9.41	12.22	0.36	0.530	2	18.215	1	0.206	1	0.200	1
FTSE BM EMAS Index		14.02	18.87	1.00	0.587	1	11.081	2				
3-month Malaysian T-bill		2.94	2.03									

Note: * Significant at $p < 0.10$; ** Significant at $p < 0.05$; *** Significant at $p < 0.01$

Table 4.3 : Continued

Assigned ratings (year)	Number of funds	Average annualized returns (%)	Standard deviation (%)	Beta	Sharpe ratio	Rank	Treynor ratio	Rank	Jensen's Alpha (%)	Rank	Fama-French 3-factor (%)	Rank
3-year period (December 2007 to November 2010)												
1-Key	10	-5.04	8.42	0.13	-0.918	6	-58.050	6	-0.526	5	-0.693*	5
2-Key	15	-1.02	13.36	0.20	-0.278	4	-18.864	4	-0.387	3	-0.612	3
3-key	12	-1.18	13.62	0.20	-0.284	5	-18.877	5	-0.403	4	-0.630	4
4-key	11	0.37	12.44	0.18	-0.187	3	-12.677	3	-0.266	2	-0.442	2
5-key (Lipper leader)	20	1.41	12.07	0.16	-0.107	2	-7.915	2	-0.170	1	-0.364	1
FTSE BM EMAS Index		5.25	21.37	1.00	0.120	1	2.559	1				
3-month Malaysian T-bill		2.69	2.16									

Note: * Significant at $p < 0.10$; ** Significant at $p < 0.05$; *** Significant at $p < 0.01$

Sharpe and Treynor ratio comes directly from a difference in portfolio diversification level.

Furthermore, this study also examined unit trusts performance using the Jensen's alpha and Fama and French performance measures. As reported in Table 4.3, the overall negative values of both performance measures across all investment horizons indicate the inferiority and inability of unit trusts to beat the market and the risk free rate. Moreover, the risk-adjusted performance of the lowest rated funds showed a significant inferior performance for 10-year investment horizon with a monthly return of -0.483% (about -5.796% annually) for Jensen's alpha and -0.523% (about 6.276% annually) for Fama-French 3-factor model. On the other hand, results also showed that only 5-key rated funds could outperformed the market and risk free rate for 10- and 5-year investment horizons. However, it is found to be statistically insignificant. Despite an inferior overall performance of unit trusts, the Lipper's rating could still differentiate between bad and good funds. Results show that the alpha values of both performance measures of funds with 1-key rating exhibit a much lower value as compared to the fund with 3-, 4- or 5-key rating (see Table 3). In term of ranking, overall results showed that both the Jensen's alpha and Fama and French performance measure ranked funds in accordance to the rankings of Sharpe and Treynor measures in all three investment horizons. This shows that Lipper's rating system was able to identify inferior funds (1-key rated funds) but weak in differentiating among superior funds (3-,4, and 5-key rated funds). All results discussed earlier suggested that the sample of unit trusts selected based on Lipper's rating category were not performing well relative to the market index

and risk free rate. Moreover, results showed that only 5-key rated funds that able to outperformed the market benchmarks for 10- and 5-year investment horizons, but it is not statistically significant.

Faced with the issue of inferior performance for overall unit trusts except for the highest (5-key) rated fund, how does ratings assist and provide preferences to unit trust investors if the performance of highly rated fund group is not significantly different with the lowest rated fund. In order to achieve the objective of the study in examining performance differential between the ratings, further analysis is needed to be done. The results of performance differential between fund rating is reported in Table 4.4. It is observed that the performance in 10-year investment horizon between 5- to 1-key, 4- to 1-key, and 3- to 1-key rated funds were significantly different at the 99%, 95%, and 95% confidence level, respectively, for both performance measures. Furthermore, a significant performance was also recorded between 5- to 2-key, 4- to 2-key, and 3- to 2-key rated funds with a confidence level ranging from 90% to 99% for 10-year investment horizon. In addition, it is also observed that both performance measures reported a significant performance difference between 5- to 1-key and 4- to 1-key rated funds at 95% confidence level for the 5-year investment horizon. Meanwhile, the results for 3-year investment horizon showed only the performance between 5- to 1-key rated funds is significant at 90% confidence level. The results reveal that not only the highest rated fund outperform the lowest rated fund but the next to highest (4-key) and second to highest (3-key) rated fund were also significantly outperforming the lowest rated fund for 10-year investment horizon. Additionally, only the highest and next to highest rated

fund is reported to significantly outperforming the lowest rated fund in 5- and 3-year investment horizons. From the result, it reveals highly rated funds are significantly outperformed the lowest rated funds, hence supported the first hypothesis.

This suggests that the Lipper's rating system could identify superior and inferior unit trusts. However, there is a weak evidence to show the difference between the performance of fund in highly rated group (between 5- to 4-key, 4- to 3-key, and 5- to 3-key) for the 10-year, 5-year, and 3-year investment horizons. Hence, the second hypothesis is supported where the performance of highly rated funds were found to be insignificantly different from each other. This result is consistent with the work done by Blake and Morey (2000) and Morey (2005) in examining information content of Morningstar rating. It should be noted that using the Jensen's alpha and Fama and French 3-factor model would also reveal the management ability in term of stock selection skills. In this study, the findings indicate that the lowest rated funds have poor management ability in companion to the highly rated funds.

Table 4.4: Performance differential between fund ratings using the Jensen and Fama-French three-factor model

Performance differential (year)		Jensen's alpha		Fama-French 3-factor model	
		Alpha (%)	T-stat	Alpha (%)	T-stat
10-year period (December 2000 to November 2010)					
Ratings (key)	5 to 1	0.552***	2.876	0.575***	2.926
	5 to 2	0.393***	2.662	0.405***	2.681
	5 to 3	0.136	1.008	0.096	0.713
	5 to 4	0.133	1.060	0.175	1.388
	4 to 1	0.419**	2.261	0.399**	2.115
	4 to 2	0.260**	2.118	0.230*	1.848
	4 to 3	0.003	0.019	-0.079	-0.614
	3 to 1	0.416**	2.047	0.479**	2.345
	3 to 2	0.257*	1.704	0.309**	2.049
	2 to 1	0.159	0.817	0.169	0.849
5-year period (December 2005 to November 2010)					
Ratings (key)	5 to 1	0.439**	2.296	0.446**	2.274
	5 to 2	0.241	1.239	0.213	1.099
	5 to 3	0.226	1.127	0.207	1.009
	5 to 4	0.210	1.171	0.185	1.034
	4 to 1	0.228	1.609	0.261**	1.837
	4 to 2	0.031	0.287	0.028	0.249
	4 to 3	0.016	0.120	0.021	0.158
	3 to 1	0.212	1.148	0.239	1.263
	3 to 2	0.015	0.108	0.006	0.044
	2 to 1	0.197	1.288	0.233	1.525
3-year period (December 2007 to November 2010)					
Ratings (key)	5 to 1	0.356*	1.873	0.322	1.606
	5 to 2	0.216	1.108	0.253	1.298
	5 to 3	0.233	1.124	0.268	1.231
	5 to 4	0.096	0.541	0.080	0.438
	4 to 1	0.260	1.303	0.242	1.232
	4 to 2	0.120	0.807	0.173	1.115
	4 to 3	0.137	0.730	0.188	0.953
	3 to 1	0.123	0.509	0.054	0.217
	3 to 2	-0.016	-0.092	-0.015	-0.082
	2 to 1	0.139	0.641	0.069	0.338

Note: * Significant at $p < 0.10$; ** Significant at $p < 0.05$; *** Significant at $p < 0.01$

4.5 Concluding Remarks

From the reported results, it can be concluded that the overall performance of unit trusts were below the market index and the risk free rate. Furthermore, only the highest rated funds that received 5-key ratings from Lipper are outperforming the market benchmarks but it is not statistically significant. Nevertheless, the Lipper Rating System could identify between superior and inferior unit trusts. These results reveal that Lipper Rating System could somewhat provide useful information to the Malaysian unit trusts investors especially to avoid losses investing in lowest rated funds.

CHAPTER 5

CONCLUSION

5.1 Conclusion

This study aims to examine the usefulness of unit trust ratings supplied by Lipper. The findings of this study contribute towards a better understanding of how fund ratings could help investors in making informed investment decisions. In order to examine the risk-adjusted performance of unit trusts, four performance measures were utilized namely the Sharpe ratio, Treynor ratio, Jensen's alpha, and Fama and French 3-factor model. Overall, the results reveal that the performance of unit trusts taken as a sample based on rating information is below the market index and risk free rate in 10-year, 5-year, and 3-year investment horizons. Additionally, only the highest rated funds exhibit superior performance against the market benchmarks used in the study. On the other hand, the rankings based on four performance measures generally correspond to Lipper's rating especially for the lowest rated (1-and 2-key) funds and leader (5-key) funds. Meanwhile, for 3- and 4-key rated funds, there was an inconsistency observed between Lipper's rating and the ranking of performance measures where the results show that 3-key rated funds outperformed 4-key rated funds. In addition, the test on differences in performance between funds in each rating categories shows that the highest rated funds, second to highest and third to highest are significantly outperforming the lowest rated funds in a longer investment horizon. The result indicates that Lipper's rating system could identify the lowest performing funds that should be avoided by investors. Likewise, the performance of 3-, 4-, and 5-key rated

funds are not significantly different from each other. Therefore, investors could use these ratings to make informed investment decisions without going into time consuming analysis to identify between bad and good funds in the market. It may be concluded that investors could protect their wealth in unit trust investment by using rating information supplied by Lipper.

5.2 Limitation of the Study

Several limitations were faced in conducting this study specifically in term of data collection and stipulated time to finish the study. The data regarding net asset values of unit trusts were available only on Bloomberg Terminal that can be accessed at the Library of Bursa Malaysia. With the limited time and resources, some of the factors, which in this case, the SMB and HML, were represented by the indexes that were readily available instead of constructing them such as what Fama and French (1993) did. Furthermore, the returns of unit trusts should take into account dividend payment in order to ensure a more robust analysis is made.

5.3 Implication of the Study

The high growth of unit trust industry provide opportunities for investors to select appropriate funds that serve their preferences and investment objectives. Notably, there are quite a number of unit trusts of different type of assets and classifications that are available for investors to select thus could make them facing a pickle issue in funds selection process. Generally, they would refer to the independent research agencies to provide information on fund rating. Thus for, in Malaysia Lipper has always been a referral body that the investors look at. Based on the findings of this study, the Lipper's Rating System is quite reliable in identifying the highest and lowest performing funds. Hence, investors could use this rating in their investment decision making.

5.4 Direction for Future Study

Based on the limitation of the study, it is suggested that future research should include dividend in the calculation of return as investors would normally receive two types of return from unit trust investment. In addition, some of the determining factors could be self-constructed rather than using an existing indexes which might not even represent the factors concerned. Furthermore, additional variables might need to be looked into when examining fund performance as it should correspond with the characteristics of a fund. For example, future research should include bond index when evaluating mixed asset fund using Fama and French 3-factor model as proposed by Gruber (1996). Moreover, future research also could utilize the sample from other rating suppliers such as Morningstar and compare them with Lipper's to see which one could provide

superior information to investors. Since the rating provided by Lipper or Morningstar is subject to changes on a monthly basis, it is also recommended that future study would examine the effect of such changes on fund performance.

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APPENDIXES

APPENDIX 1: LIST OF UNIT TRUSTS

No	Fund's Name	Classification/group	Rating
1	Affin Islamic Equity Fund	Equity	2
2	Affin Equity Fund	Equity	2
3	Alliance Dana Adib	Equity	1
4	Alliance Dana Alif	Mixed Asset	3
5	Alliance First Find	Mixed Asset	2
6	Alliance Tactical Growth	Equity	2
7	AMB Balanced Trust Fund	Mixed Asset	3
8	AMB Dana Yakin	Equity	2
9	AMB Ethical Trust Fund	Equity	5
10	AMB Income Trust Fund	Bond	1
11	AMB SmallCap Trust Fund	Equity	3
12	AMB Unit Trust Fund	Equity	2
13	AMB Value Trust Fund	Equity	5
14	AmBalanced	Mixed Asset	2
15	AmConservative	Mixed Asset	1
16	AmCumulative Growth	Equity	2
17	AmIslamic Growth	Equity	2
18	AmIttikal	Equity	2
19	AMM Index-Linked Trust	Equity	4
20	AmTotal Return	Equity	2
21	Apex Dana Al-Sofi	Equity	3
22	Areca Equity Trust Fund	Equity	5
23	ASM Balanced Fund	Mixed Asset	1
24	ASM Dana Bestari	Equity	1
25	ASM Dana Mutiara	Equity	1
26	ASM Index Fund	Equity	2
27	ASM Premier Fund	Equity	2
28	Avenue EquityExtra Fund	Equity	2
29	Avenue Income Extra Fund	Bond	1
30	Avenue Shariah Extra Fund	Mixed Asset	1
31	Cimb Principal Equity Aggrsve 1	Equity	2
32	CIMB Principal Equity Fund	Equity	5
33	Cimb Principal Income Plus Balance Fund	Mixed Asset	4
34	HwangDbs Aiiman Growth Fund	Equity	5
35	HwangDbs Select Balanced	Mixed Asset	5
36	Kenanga Growth Fund	Equity	5
37	Kenanga Syariah Growth Fund	Equity	5

38	MAAKL Al-Faid	Equity	3
39	MAAKL Al-Umran	Mixed Asset	5
40	MAAKL Dividend Fund	Equity	5
41	MAAKL Equity Index Fund	Equity	5
42	MAAKL Growth Fund	Equity	5
43	MAAKL HDBS Flexi Fund	Mixed Asset	5
44	MAAKL Value Fund	Equity	5
45	OSK UOB Dana Islam	Equity	1
46	OSK UOB Equity Trust	Equity	4
47	OSK UOB Kidsave Trust	Mixed Asset	5
48	OSK UOB Smart Income Fund	Mixed Asset	5
49	OSK-UOB KLCI Tracker Fund	Equity	3
50	OSK-UOB Smart Treasure Fund	Equity	3
51	Pacific Dividend Fund	Equity	5
52	Pacific Income Fund	Mixed Asset	5
53	Pacific Recovery Fund	Equity	4
54	Prudential Dana Al-Ilham	Equity	3
55	Prudential Dana Al-Islah	Mixed Asset	3
56	Prudential Dana Dinamik	Mixed Asset	4
57	Prudential Equity Income	Equity	3
58	Public Index Fund	Equity	3
59	Public Islamic Dividend Fund	Equity	4
60	Public Savings Fund	Equity	5
61	RHB Capital Fund	Equity	4
62	RHB Dynamic Fund	Equity	4
63	RHB Islamic Growth Fund	Equity	1
64	RHB Mudharabah Fund	Mixed Asset	4
65	TA Growth Fund	Equity	4
66	TA High Growth Fund	Equity	3
67	TA Income Fund	Mixed Asset	4
68	TA Islamic Fund	Equity	5

APPENDIX 2: DESCRIPTIVE STATISTICS

	N	Minimum	Maximum	Mean	Std. Deviation
5-KEY	120	-.0848	.0887	.004490	.0366997
4-KEY	120	-.0928	.0911	.003062	.0352149
3KEY	120	-.1091	.0934	.003286	.0377455
2-KEY	120	-.1147	.0875	.000567	.0379843
1-KEY	120	-.0980	.0702	-.001502	.0309536
EMAS INDEX	120	-.1920	.1380	.006936	.0538379
KLCI INDEX	120	-.1777	.1228	.007019	.0499303
FTSE SMALL CAP	120	-.1535	.2591	.006670	.0734873
FTSE 100	120	-.1995	.1364	.007453	.0527161
MSCI WORLD	120	-.2905	.1562	.001487	.0551843
MSCI MSIA GROWTH	120	-.2434	.1649	.005723	.0578116
MSCI MSIA VALUE	120	-.1289	.1409	.009003	.0502664
MGS OVERALL TERM	120	-.0276	.0334	.004308	.0096528
3-MONTH MSIAN T-BILL	120	.0175	.0350	.027663	.0047244
Valid N (listwise)	120				

APPENDIX 3: CORRELATION COEFFICIENTS

	5-KEY	4-KEY	3KEY	2-KEY	1-KEY	EMAS INDEX	KLCI INDEX	FTSE SMALL CAP	FTSE 100	MSCI WORLD	MSCI MSIA GROWTH	MSCI MSIA VALUE	MGS OVERALL TERM	3-MONTH MSIAN T-BILL
5-KEY	1	.928(**)	.922(**)	.908(**)	.810(**)	.475(**)	.466(**)	.460(**)	.464(**)	.475(**)	.439(**)	.468(**)	-.037	-.078
4-KEY	.928(**)	1	.921(**)	.936(**)	.814(**)	.462(**)	.464(**)	.425(**)	.456(**)	.485(**)	.427(**)	.477(**)	-.022	-.110
3KEY	.922(**)	.921(**)	1	.905(**)	.788(**)	.508(**)	.505(**)	.465(**)	.504(**)	.510(**)	.491(**)	.485(**)	-.016	-.075
2-KEY	.908(**)	.936(**)	.905(**)	1	.817(**)	.459(**)	.454(**)	.440(**)	.450(**)	.492(**)	.420(**)	.454(**)	-.054	-.104
1-KEY	.810(**)	.814(**)	.788(**)	.817(**)	1	.384(**)	.372(**)	.392(**)	.370(**)	.423(**)	.339(**)	.392(**)	-.010	-.087
EMAS INDEX	.475(**)	.462(**)	.508(**)	.459(**)	.384(**)	1	.990(**)	.875(**)	.995(**)	.531(**)	.965(**)	.967(**)	-.012	-.162
KLCI INDEX	.466(**)	.464(**)	.505(**)	.454(**)	.372(**)	.990(**)	1	.824(**)	.994(**)	.527(**)	.973(**)	.967(**)	-.001	-.170
FTSE SMALL CAP	.460(**)	.425(**)	.465(**)	.440(**)	.392(**)	.875(**)	.824(**)	1	.826(**)	.549(**)	.775(**)	.819(**)	-.038	-.107
FTSE 100	.464(**)	.456(**)	.504(**)	.450(**)	.370(**)	.995(**)	.994(**)	.826(**)	1	.516(**)	.974(**)	.967(**)	-.007	-.170
MSCI WORLD	.475(**)	.485(**)	.510(**)	.492(**)	.423(**)	.531(**)	.527(**)	.549(**)	.516(**)	1	.486(**)	.503(**)	.097	-.194(*)
MSCI MSIA GROWTH	.439(**)	.427(**)	.491(**)	.420(**)	.339(**)	.965(**)	.973(**)	.775(**)	.974(**)	.486(**)	1	.905(**)	.029	-.162
MSCI MSIA VALUE	.468(**)	.477(**)	.485(**)	.454(**)	.392(**)	.967(**)	.967(**)	.819(**)	.967(**)	.503(**)	.905(**)	1	-.023	-.140
MGS OVERALL TERM	-.037	-.022	-.016	-.054	-.010	-.012	-.001	-.038	-.007	.097	.029	-.023	1	.055
3-MONTH MSIAN T-BILL	-.078	-.110	-.075	-.104	-.087	-.162	-.170	-.107	-.170	-.194(*)	-.162	-.140	.055	1
	120	120	120	120	120	120	120	120	120	120	120	120	120	120

APPENDIX 4: UNIT TRUST PERFORMANCE BASED ON JENSEN'S ALPHA PERFORMANCE MEASURE

Coefficients (10-year investment horizon)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.003		.229	.819
	Emas Excess return	.325	.055	.476	5.884	.000

a Dependent Variable: 5-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.001	.003		-.225	.822
	Emas Excess return	.303	.053	.464	5.687	.000

a Dependent Variable: 4-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.001	.003		-.225	.822
	Emas Excess return	.357	.056	.510	6.436	.000

a Dependent Variable: 3-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.003	.003		-1.045	.298
	Emas Excess return	.325	.058	.461	5.641	.000

a Dependent Variable: 2-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.005	.003		-1.838	.069
	Emas Excess return	.222	.049	.386	4.543	.000

a Dependent Variable: 1-key excess return

Coefficients (5-year investment horizon)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.004		.528	.599
	Emas Excess return	.357	.071	.551	5.034	.000

a Dependent Variable: 5-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-4.72E-005	.003		-.014	.989
	Emas Excess return	.391	.063	.631	6.189	.000

a Dependent Variable: 4-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.004		-.054	.957
	Emas Excess return	.433	.070	.633	6.227	.000

a Dependent Variable: 3-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.004		-.094	.925
	Emas Excess return	.397	.069	.604	5.771	.000

a Dependent Variable: 2-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.002	.003		-.863	.392
	Emas Excess return	.287	.049	.608	5.834	.000

a Dependent Variable: 1-key excess return

Coefficients (3-year investment horizon)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.002	.005		-.350	.729
	Emas Excess return	.325	.080	.574	4.086	.000

a Dependent Variable: 5-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.003	.005		-.566	.575
	Emas Excess return	.375	.077	.641	4.866	.000

a Dependent Variable: 4-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.004	.005		-.784	.438
	Emas Excess return	.410	.084	.641	4.876	.000

a Dependent Variable: 3-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.004	.005		-.755	.455
	Emas Excess return	.394	.084	.627	4.699	.000

a Dependent Variable: 2-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.005	.004		-1.462	.153
	Emas Excess return	.267	.059	.614	4.541	.000

a Dependent Variable: 1-key excess return

APPENDIX 5: UNIT TRUST PERFORMANCE BASED ON FAMA AND FRENCH 3-FACTOR MODEL

Coefficients (10-year investment horizon)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.003		.172	.864
	Emas Excess return	.319	.061	.468	5.198	.000
	HML	.075	.130	.050	.577	.565
	SMB2	.072	.076	.083	.957	.340

a Dependent Variable: 5-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.001	.003		-.421	.674
	Emas Excess return	.321	.059	.490	5.416	.000
	HML	.158	.125	.110	1.256	.212
	SMB2	.016	.073	.019	.222	.825

a Dependent Variable: 4-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.003		-.143	.886
	Emas Excess return	.343	.062	.489	5.525	.000
	HML	-.041	.131	-.027	-.312	.755
	SMB2	.041	.076	.046	.540	.590

a Dependent Variable: 3-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.004	.003		-1.116	.267
	Emas Excess return	.326	.064	.462	5.082	.000
	HML	.101	.136	.066	.746	.457
	SMB2	.059	.079	.065	.742	.460

a Dependent Variable: 2-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.005	.003		-1.964	.052
	Emas Excess return	.224	.054	.390	4.159	.000
	HML	.133	.114	.106	1.166	.246
	SMB2	.071	.066	.096	1.063	.290

a Dependent Variable: 1-key excess return

Coefficients (5-year investment horizon)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.004		.500	.619
	Emas Excess return	.339	.086	.523	3.924	.000
	SMB2	.042	.096	.053	.434	.666
	HML	-.026	.180	-.018	-.145	.885

a Dependent Variable: 5-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.004		.041	.967
	Emas Excess return	.401	.077	.647	5.217	.000
	SMB2	-.041	.085	-.055	-.484	.631
	HML	-.017	.160	-.012	-.108	.914

a Dependent Variable: 4-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-6.66E-005	.004		-.017	.987
	Emas Excess return	.429	.085	.627	5.057	.000
	SMB2	-.007	.094	-.009	-.076	.940
	HML	-.036	.177	-.023	-.201	.842

a Dependent Variable: 3-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.004		-.033	.974
	Emas Excess return	.409	.084	.623	4.898	.000
	SMB2	-.050	.093	-.063	-.541	.590
	HML	-.018	.174	-.012	-.103	.919

a Dependent Variable: 2-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.002	.003		-.884	.381
	Emas Excess return	.286	.060	.604	4.757	.000
	SMB2	.018	.067	.031	.265	.792
	HML	.021	.125	.020	.167	.868

a Dependent Variable: 1-key excess return

Coefficients (3-year investment horizon)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.004	.005		-.724	.475
	Emas Excess return	.433	.105	.763	4.104	.000
	SMB	-.111	.115	-.152	-.962	.343
	HML	.326	.233	.237	1.400	.171

a Dependent Variable: 5-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.004	.005		-.928	.361
	Emas Excess return	.499	.100	.852	4.991	.000
	SMB	-.183	.109	-.244	-1.683	.102
	HML	.294	.221	.207	1.331	.193

a Dependent Variable: 4-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.006	.005		-1.210	.235
	Emas Excess return	.550	.109	.860	5.040	.000
	SMB	-.174	.119	-.212	-1.461	.154
	HML	.381	.241	.245	1.580	.124

a Dependent Variable: 3-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.006	.005		-1.199	.239
	Emas Excess return	.548	.107	.873	5.123	.000
	SMB	-.220	.117	-.273	-1.890	.068
	HML	.376	.236	.247	1.592	.121

a Dependent Variable: 2-key excess return

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.007	.004		-1.879	.069
	Emas Excess return	.353	.077	.812	4.575	.000
	SMB	-.076	.084	-.136	-.899	.375
	HML	.281	.171	.266	1.648	.109

a Dependent Variable: 1-key excess return

APPENDIX 6: RESULTS OF PERFORMANCE DIFFERENTIAL USING THE JENSEN'S ALPHA.

Alpha values (10-year performance differential)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.006	.002		2.876	.005
	Emas Excess return	.103	.036	.257	2.884	.005

a Dependent Variable: 5-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.001		2.662	.009
	Emas Excess return	-.001	.027	-.002	-.021	.983

a Dependent Variable: 5-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.001		1.008	.315
	Emas Excess return	-.033	.025	-.120	-1.311	.193

a Dependent Variable: 5-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.001		1.060	.291
	Emas Excess return	.021	.023	.083	.909	.365

a Dependent Variable: 5-4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.002		2.261	.026
	Emas Excess return	.082	.034	.213	2.373	.019

a Dependent Variable: 4-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.001		2.118	.036
	Emas Excess return	-.022	.023	-.088	-.955	.341

a Dependent Variable: 4-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	2.53E-005	.001		.019	.985
	Emas Excess return	-.054	.025	-.197	-2.184	.031

a Dependent Variable: 4-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.002		2.047	.043
	Emas Excess return	.135	.038	.314	3.588	.000

a Dependent Variable: 3-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.002		1.704	.091
	Emas Excess return	.032	.028	.105	1.147	.254

a Dependent Variable: 3-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		.817	.416
	Emas Excess return	.103	.036	.254	2.858	.005

a Dependent Variable: 2-1

Alpha values (5-year performance differential)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.002		2.296	.025
	Emas Excess return	.070	.035	.255	2.007	.049

a Dependent Variable: 5-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.239	.220
	Emas Excess return	-.039	.035	-.144	-1.105	.274

a Dependent Variable: 5-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.127	.264
	Emas Excess return	-.076	.037	-.262	-2.067	.043

a Dependent Variable: 5-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.171	.246
	Emas Excess return	-.033	.033	-.132	-1.013	.315

a Dependent Variable: 5-4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.001		1.609	.113
	Emas Excess return	.103	.026	.464	3.984	.000

a Dependent Variable: 4-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.001		.287	.775
	Emas Excess return	-.006	.020	-.040	-.307	.760

a Dependent Variable: 4-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.001		.120	.905
	Emas Excess return	-.042	.024	-.224	-1.749	.086

a Dependent Variable: 4-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.148	.256
	Emas Excess return	.146	.034	.493	4.315	.000

a Dependent Variable: 3-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.001		.108	.914
	Emas Excess return	.036	.025	.187	1.448	.153

a Dependent Variable: 3-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.288	.203
	Emas Excess return	.109	.028	.456	3.904	.000

a Dependent Variable: 2-1

Alpha values (3-year performance differential)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.002		1.873	.070
	Emas Excess return	.058	.031	.305	1.866	.071

a Dependent Variable: 5-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.108	.276
	Emas Excess return	-.068	.032	-.344	-2.139	.040

a Dependent Variable: 5-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.124	.269
	Emas Excess return	-.085	.034	-.393	-2.495	.018

a Dependent Variable: 5-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.002		.541	.592
	Emas Excess return	-.049	.029	-.279	-1.694	.099

a Dependent Variable: 5-4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.002		1.303	.201
	Emas Excess return	.107	.033	.492	3.292	.002

a Dependent Variable: 4-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.001		.807	.425
	Emas Excess return	-.019	.024	-.133	-.783	.439

a Dependent Variable: 4-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.002		.730	.470
	Emas Excess return	-.035	.031	-.194	-1.153	.257

a Dependent Variable: 4-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.002		.509	.614
	Emas Excess return	.143	.040	.526	3.602	.001

a Dependent Variable: 3-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.002		-.092	.927
	Emas Excess return	.016	.029	.095	.558	.580

a Dependent Variable: 3-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.002		.641	.526
	Emas Excess return	.126	.036	.520	3.553	.001

a Dependent Variable: 2-1

APPENDIX 7: RESULTS OF PERFORMANCE DIFFERENTIAL USING THE FAMA AND FRENCH 3-FACTOR MODEL.

Alpha values (10-year performance differential)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.006	.002		2.926	.004
	Emas Excess return	.095	.040	.236	2.378	.019
	SMB2	.002	.049	.003	.036	.971
	HML	-.058	.084	-.066	-.691	.491

a Dependent Variable: 5-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.002		2.681	.008
	Emas Excess return	-.007	.031	-.024	-.232	.817
	SMB2	.014	.038	.036	.364	.717
	HML	-.026	.065	-.041	-.407	.685

a Dependent Variable: 5-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.001		.713	.477
	Emas Excess return	-.024	.027	-.088	-.883	.379
	SMB2	.031	.034	.089	.925	.357
	HML	.116	.058	.194	2.011	.047

a Dependent Variable: 5-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.001		1.388	.168
	Emas Excess return	-.002	.026	-.008	-.084	.933
	SMB2	.056	.032	.173	1.781	.078
	HML	-.083	.054	-.149	-1.527	.130

a Dependent Variable: 5-4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.002		2.115	.037
	Emas Excess return	.097	.038	.253	2.529	.013
	SMB2	-.054	.047	-.111	-1.154	.251
	HML	.025	.081	.029	.303	.763

a Dependent Variable: 4-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.001		1.848	.067
	Emas Excess return	-.005	.025	-.020	-.197	.844
	SMB2	-.042	.031	-.134	-1.366	.175
	HML	.056	.053	.104	1.055	.294

a Dependent Variable: 4-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.001	.001		-.614	.541
	Emas Excess return	-.022	.026	-.080	-.836	.405
	SMB2	-.025	.032	-.072	-.778	.438
	HML	.199	.055	.332	3.581	.001

a Dependent Variable: 4-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.005	.002		2.345	.021
	Emas Excess return	.119	.041	.275	2.870	.005
	SMB2	-.029	.051	-.053	-.575	.567
	HML	-.174	.088	-.184	-1.989	.049

a Dependent Variable: 3-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.002		2.049	.043
	Emas Excess return	.017	.031	.055	.554	.580
	SMB2	-.017	.038	-.044	-.459	.647
	HML	-.142	.065	-.213	-2.198	.030

a Dependent Variable: 3-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		.849	.398
	Emas Excess return	.102	.040	.250	2.516	.013
	SMB2	-.012	.050	-.023	-.240	.811
	HML	-.032	.086	-.036	-.371	.711

a Dependent Variable: 2-1

Alpha values (5-year performance differential)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.004	.002		2.274	.027
	Emas Excess return	.054	.042	.195	1.266	.211
	SMB2	.024	.047	.072	.510	.612
	HML	-.047	.088	-.076	-.533	.596

a Dependent Variable: 5-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.099	.277
	Emas Excess return	-.070	.042	-.257	-1.679	.099
	SMB2	.092	.046	.276	1.977	.053
	HML	-.008	.087	-.013	-.095	.925

a Dependent Variable: 5-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.009	.317
	Emas Excess return	-.090	.044	-.310	-2.025	.048
	SMB2	.049	.049	.139	.992	.325
	HML	.009	.092	.014	.101	.920

a Dependent Variable: 5-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.034	.305
	Emas Excess return	-.061	.039	-.244	-1.588	.118
	SMB2	.083	.043	.270	1.929	.059
	HML	-.009	.081	-.016	-.110	.913

a Dependent Variable: 5-4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.001		1.837	.072
	Emas Excess return	.115	.031	.517	3.758	.000
	SMB2	-.059	.034	-.217	-1.732	.089
	HML	-.038	.064	-.076	-.598	.552

a Dependent Variable: 4-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.001		.249	.804
	Emas Excess return	-.009	.024	-.059	-.369	.713
	SMB2	.009	.027	.049	.339	.736
	HML	.001	.050	.002	.011	.991

a Dependent Variable: 4-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.001		.158	.875
	Emas Excess return	-.028	.029	-.148	-.960	.341
	SMB2	-.034	.033	-.147	-1.047	.300
	HML	.018	.061	.042	.297	.767

a Dependent Variable: 4-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.263	.212
	Emas Excess return	.143	.041	.485	3.503	.001
	SMB2	-.025	.045	-.069	-.546	.587
	HML	-.056	.085	-.084	-.662	.511

a Dependent Variable: 3-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	6.22E-005	.001		.044	.965
	Emas Excess return	.019	.030	.099	.639	.525
	SMB2	.043	.034	.181	1.283	.205
	HML	-.018	.063	-.040	-.280	.781

a Dependent Variable: 3-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.525	.133
	Emas Excess return	.124	.033	.517	3.758	.000
	SMB2	-.068	.037	-.233	-1.855	.069
	HML	-.039	.069	-.072	-.564	.575

a Dependent Variable: 2-1

Alpha values (3-year performance differential)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.002		1.606	.118
	Emas Excess return	.083	.042	.437	2.004	.054
	SMB2	-.047	.047	-.188	-1.015	.318
	HML	.052	.093	.113	.563	.577

a Dependent Variable: 5-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.002		1.298	.203
	Emas Excess return	-.109	.040	-.549	-2.702	.011
	SMB2	.102	.045	.388	2.251	.031
	HML	-.051	.091	-.105	-.559	.580

a Dependent Variable: 5-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.003	.002		1.231	.227
	Emas Excess return	-.113	.045	-.524	-2.496	.018
	SMB2	.056	.051	.198	1.110	.275
	HML	-.054	.101	-.103	-.532	.598

a Dependent Variable: 5-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.002		.438	.664
	Emas Excess return	-.060	.038	-.341	-1.587	.122
	SMB2	.063	.043	.269	1.480	.149
	HML	.034	.085	.080	.403	.689

a Dependent Variable: 5-4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.232	.227
	Emas Excess return	.143	.041	.657	3.526	.001
	SMB2	-.110	.046	-.382	-2.417	.022
	HML	.018	.091	.034	.199	.844

a Dependent Variable: 4-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		1.115	.273
	Emas Excess return	-.049	.032	-.341	-1.524	.137
	SMB2	.039	.036	.206	1.082	.287
	HML	-.085	.072	-.243	-1.178	.247

a Dependent Variable: 4-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.002	.002		.953	.348
	Emas Excess return	-.053	.041	-.289	-1.284	.208
	SMB2	-.007	.046	-.028	-.146	.884
	HML	-.088	.092	-.199	-.961	.344

a Dependent Variable: 4-3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.002		.217	.829
	Emas Excess return	.196	.051	.722	3.835	.001
	SMB2	-.104	.057	-.288	-1.806	.080
	HML	.106	.115	.161	.928	.360

a Dependent Variable: 3-1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.000	.002		-.082	.935
	Emas Excess return	.004	.039	.021	.092	.927
	SMB2	.046	.043	.204	1.055	.300
	HML	.003	.087	.008	.038	.970

a Dependent Variable: 3-2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	.001	.002		.338	.737
	Emas Excess return	.192	.042	.792	4.560	.000
	SMB2	-.149	.047	-.465	-3.154	.003
	HML	.103	.095	.175	1.089	.284

a Dependent Variable: 2-1