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THE PERFORMANCE OF EMERGING MARKETS MUTUAL FUNDS BEFORE, DURING AND AFTER MARKET DOWNTURNS

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ABSTRACT

Investing in emerging market has been a trend among investors for many years, and for investors in developed countries, mutual funds have been one of the most important vehicles for them to make investment in emerging markets. In this paper, multiple liner regression is used to investigate the performance of US-based mutual funds investing in different emerging markets before, during and after the 2008 global financial crisis.

The result of the paper is consistent with most of the previous literature conducting in this area. Emerging market mutual funds based in developed markets underperform their corresponding emerging market indices during the whole sample period and most of the sub-periods. Besides, funds with geographical focus yield better return than funds without geographical focuses. In addition, referring to the Morningstar fund rating methodology, data set is sorted into different portfolios according to the star rating. The regression result shows that mutual funds with higher star rating perform better than funds with lower star rating, and especially during the market recovering period, 5 star portfolio obtains positive and significant Jensen's alpha.

KEYWORDS: mutual fund, emerging market, financial crisis, Morningstar

1 INTRODUCTION

1.1 Background Introduction

With the development of financial instrument, investing in financial funds, such as mutual fund, hedge fund and exchange-traded fund (ETF), becomes more and more popular among investors over past decades. According to the ICI (Investment Company Institute), the net assets of funds increases rapidly every year. In 2013 the total net assets of mutual funds all over the world is 15,018 billions dollar, comparing to 6.965 billions dollar in 2000. By investing in the fund industry, investors can easily diversify their assets with the assistant of skilled fund managers, thus it helps them reduce the risk of the investment effectively. In addition, the trend of market globalization provide investors opportunity to allocate their assets aboard easily. For instance, many financial service companies have developed funds which are focusing on foreign stock, bond and money markets. Taking one company as example, Fidelity Investment generates a fund type called “international and global stock funds”. Within this category, investors in the US are able to access funds focusing on the stock markets or bond markets in Europe, Japan and Pacific countries. Moreover, Fidelity Investment has also created several mutual funds specifically focusing on emerging markets, such as China and Latin America.

Many investors believe that emerging economies have more liberalization than developed economies. Buchanan et al (2011), Barry et al (1998) and Serra (2000) have investigate emerging market performance, and they draw similar conclusion that investing in emerging markets is able to yield abnormal returns and provide diversification benefit, because emerging markets are developing rapidly and steadily, as well as the correlation between it and developed market is low. In addition, the emerging markets are not as sufficient as the developed markets, hence there exists

more opportunities for financial investors to obtain abnormal returns in emerging markets than in developed markets (Joop Huij, Thierry Post, 2011).

According to IMF (2009), Since 2000, Emerging market growth rate stands at an average of 6.2% compared with only 2.6% in advanced economies. IMF also conducted a survey about “Emerging markets drive global recovery” in 2009. It concludes that emerging markets survived and recovered from the recession better than developed economies, and economic growth of emerging markets will allow those developing countries to play a significant role in global economic governance and take on more responsibility for economic and financial stability in the future. In other words, while the advanced economies struggle with recession and financial crisis, emerging markets have become the dominant drivers of global growth. Therefore, investing in emerging markets during and after the recession should be competitive and attractive to some extent.

However, while the foreign investments inflowing the emerging markets and leading the economics growth rapidly, the ease of capital mobility, the underdeveloped and opaque financial systems and the unstable political situations also left these emerging countries vulnerable to changes in financial markets. (De Santis and Imrohoroglu, 1997). Moreover, Bekaert (1995) lists three different categories of barriers of investing in emerging markets, they are: legal barriers, indirect barriers due to the asymmetry of information and many risks such as liquidity risk, political risk and currency risk. These barriers are unlikely to disappear in short term, which makes the outcome of emerging market investment unpredictable.

In addition, taking a look at economy situation in emerging markets, there are may crisis in emerging markets during the last 20 years: 1994-1995, Mexico economic crisis; 1997-1998 Asia financial crisis; 1998, Russian financial crisis; 2000-2001 Turkish crisis;

2001 Argentine crisis (Forbes and Rigobon, in press, Bae et al, in press). Further, Global Financial Crisis started in early 21st century has exert huge impact on emerging economies as well.

When searching for literature about investigating the performance of US or UK based emerging market mutual funds, Some but not many studies have been conducted in this area. Moreover, the study results are not consistent with each other, and their study directions and focuses are different. Huji and Post (2011) provide evidence that emerging market mutual funds based on the US market display better performance than funds investing locally. Kacperczyk, Sialm and Zheng (2005) present evidence that emerging markets mutual funds with greater industry concentration perform better on average. To the contrary, Ackermann et al. (1999) and Liang (1999) find that mutual fund perform lower than the market indices. Eling and Faust (2010) conclude that some hedge funds generate significant positive alpha, but most of the mutual funds can not outperform benchmarks.

One article that inspires the idea of writing this paper is the research done by Kotkatvuori-Örnberg, Nikkinen and Peltomäki (2011). They make investigation on the performance of emerging market hedge funds and find out that this type of hedge funds can outperform their underlying stock markets. Furthermore, they mention that their study could be extend to the market of emerging market mutual funds. In addition, the previous literature have not taken financial downturns into account, and the data used in their paper are relatively old. Therefore, this paper is going to make up this gap to study the performance of mutual funds investing in emerging markets during last 10 years, where the world economy has experienced worldwide financial crisis in 2007 and 2008. By doing so, it is able to see how do mutual funds based in US market but investing in emerging markets react to the financial crisis, and also to investigate if it is wise for foreign investors to invest in emerging markets, especially in the manner of holding

mutual funds focusing on those regions. Furthermore, because Morningstar is one of the most authoritative fund research and analysis company in the world, Morningstar's rating of mutual funds is referred to sort the data, in order to examine whether the rating system is able to provide investors introductional information which can help investors obtain better returns.

1.2 Hypothesis development

In this paper, the performance of mutual funds which have geographical focuses on emerging markets is analyzed, in order to see whether they outperform or underperform their market benchmarks. Because of the inconsistency of the previous literature, it is hard to predict the result and make the assumption. The whole sample period is divided into three time intervals according to the economy and finance situation, they are the booming period from 2004 to 2006, the crisis period from 2007 to 2008, and the recovering period from 2009 to 2014. By doing so, it is able to see how is the emerging market mutual fund reacting to the global economic situation change, and do they react strongly and recover quickly from the downturns. Hypothesize of the paper are as follows:

H0: Emerging markets mutual funds outperform the market benchmarks in the market booming period.
H1: Emerging markets mutual funds underperform the market benchmarks in the market booming period.

H0: Emerging markets mutual funds outperform market benchmarks during the global financial crisis period.
H2: Emerging markets mutual funds underperform market benchmarks during the global financial crisis period.

H0: Emerging markets mutual funds outperform market benchmarks during the market recovering period.
H3: Emerging markets mutual funds underperform market benchmarks during the market recovering period.

According to the IMF data, the global GDP fulled dramatically in 2007 to 2008, and start to recover in 2009. Therefore, in this paper, year 2004 to 2006 is defined as the booming period; the crisis period refers to year 2007 to 2008; and the recovering period refers to year 2009 to 2014. Many economists believe that the 2008 financial crisis, which is also known as sub-prime mortgage crisis, is one of the most significant and serious financial crisis since 1930's greet depression. A number of financial institutions were deeply involved, and the tragedy spread all over the world. During the downturn, real estate markets suffered, stock markets declined and employment rates increased. IMF concluded in their publication "World economic outlook (2009)" that " The global economy undergoing its most severe recession of the postwar period. World real GDP will drop in 2009, with advanced economies experiencing deep constructions and emerging and developing economies slowly abruptly. Trade volumes are falling sharply, while inflation is subsiding quickly."[1] In the survey, IMF gave many figures such as world GDP and consumer prices to illustrate the worldwide economic and financial situations in recent decades.

The 2008 financial crisis exerted huge impact on many aspects both in advanced markets and emerging markets. For example, negative GDP growth, increasing consumer and commodity prices and decreasing trade volume were experienced. Moreover, IMF made further studies on impact of the global financial crisis on specific regions and countries. They pointed out that "China and India have been affected by contraction in the export sector, but their economies have continued to grow because

[1] See IMF World economic and financial survey: world economic outlook-crisis and recovery, April 2009.

trade is a smaller share of the economy and policy measures have supported domestic activity. Also, there were some signs of a turnaround in economic activity in China in the first quarter of 2009. Meanwhile, the global financial crisis spread quickly to Latin American and Caribbean markets after mid-September 2008. Local equity markets have sold off heavily, with the largest losses in Argentina. Domestic currencies have depreciated sharply, especially in Brazil and Mexico, which are large commodity-exporting countries with flexible exchange rate regimes."[2]

In a nutshell, the impact of the 2008 global crisis is heavily and worldwide spread quickly, and the financial stress of advanced economies and emerging economies is closely linked. However, people expect to see that emerging economies are able to recover from the recession quickly, due to the fact that they are not heavily exposed to the US security assets and the export sector is smaller shares of these economies and their monetary and macroeconomic policies are always helping boost consumption and infrastructure investment. As the consequences, mutual funds investing in emerging market might behave calmer than funds investing in mature market during the crisis period, and give investors changes to diversify the investment risk to some extent.

1.3 Structure of the paper

The following paper is organized as follows: In section 2, previous literature relating to the topic is reviewed, and the methodology of this paper is driven from the literature mentioned in this section. In section 3, a closer look on mutual fund market is presented. Data set and methodology using in the paper is explained in section 4 and 5. The empirical results of the study are presented in section 6. Several regressions are generated to investigate the funds performance from various aspects, as well as the

[2] See IMF World economic and financial survey: world economic outlook-crisis and recovery, April 2009.

Morningstar's fund rating method is used to investigate the fund performance in deeper. Finally the section 7 is the conclusion and drawbacks of the study.

2 PREVIOUS LITERATURE

2.1 Investing in emerging markets

Investing in emerging market has been a trend among investors for many years, and many research investigated the outcomes, benefits and barriers of investing in emerging market. However the consequences of this type of investment hasn't been clearly defined, and previous literature provide conflict research results, hence it is not easy to conclude that it is good or not to make investment aboard to these fast growing economies.

Barry et al (1998) conclude that emerging markets have high level of volatility, and provide diversification benefits for investors in developed market. They study the risk and return characteristics of emerging markets during 1975 to 1995, using a composite emerging market index and find that there is no evidence of high levels of compound returns relative to US stock market (S&P 500). Nevertheless, investing in emerging market is able to provide diversification benefits when combined with developed market portfolios. During the period 1985-1995, the minimum-risk portfolio is produced by combining 80% stocks of S&P 500 and 20% of emerging market stocks. In addition, they indicate that relative portfolio performance changes over time and that optimal investment allocations also change, and there is no evidence to prove the diversification during crisis period. When analyzing the liquidity and investability of emerging markets, the authors raise up the issue that investment opportunities available for domestic investors might be different from those available for foreign investors. In order to investigate on the issue, they compare the performance of a investable index with the performance of the composite index and find that the investable index produce higher monthly return and lower standard deviation, and it might have been caused by foreign demand for investable issues and associated inflow of portfolio capital into these issues.

Last but not least, they mention the barriers for foreign investors investing in emerging market stocks, such as different languages, accounting systems. Therefore, foreign investors tend to buy shares of professionally managed funds investing in emerging market.

Buchanan et al (2011) extend Barry et al (1998)'s study, investigating the performance of emerging markets from 1988 to 2006. They use not only the emerging market composite index (EMF), but also the BRIC countries index as comparison, for the reason that these countries represent high growth economics under the emerging market umbrella, and they hold more and more important political positions in world issues nowadays. Besides, they break the emerging markets composite performance into different categories based on the seminal research of LaPorta et al. (1997, 1998): English common law countries, French civil law countries and German civil law countries. They find that indices of emerging markets under French civil law and the BRIC countries have higher returns and volatility than others. Furthermore, they examine the investability of emerging market stocks and find that low-investable indices generally have lower return are highly correlated with the S&P500; moderately-investable indices provide higher return, and French laws countries and BRIC countries stocks have low correlation with the S&P500 index which indicate their diversification potential; highly-investable indices as expected, have high correlation with the S&P500 and lower returns due to the reason that increased interest in emerging markets and increased capital mobility bidding up prices. When looking at the impact of investability on the composition of the differing possible efficient frontiers, they indicate that moderately-investable classification dominates the other classifications and the overall EFM index; low-investable stocks offer investors the greatest potential of diversification and higher return, because of the lack of capital mobility leading to bidding up of prices.

The authors draw the conclusion that investors are able to achieve benefits of investing in emerging markets with a fraction of the incremental investment and cost. They indicate that before the worldwide financial crises, financial markets have responded to the diversification benefits and return enhancement available in emerging markets by in-flowing capital into these markets, and create financial products designed to be attractive to investors interested in particular markets. However, according to their study, emerging markets stocks are not easily accessed and the moderately investable. Moreover, they indicate in the beginning of their paper that investigation of the value of emerging market diversification during the financial crises may prove insightful, and analysis of this period shows abnormal patterns and would not be representative of the role developing markets play. Such an analysis would be premature until the crisis has ended and the recovery is complete.

Serra (2000) points out in her paper that many studies show that the correlation of returns between emerging markets and mature markets is low, therefore portfolio diversification into emerging markets would have provided increased returns and lower risks. She makes further study on correlation structures and find that country pure effects are the most important factors driving the behavior of emerging markets' individual stock returns, and even within one region, the constituent markets are driven by country rather than regional effects.

Some other authors list barriers and risks investing in emerging markets. Bekaert (1995) indicate that foreign investors face three kinds of barriers when investing in emerging markets. First kind are the legal barriers refer to different legal status of foreign and domestic investors on ownership restriction and taxes; Second are indirect barriers refer to the adequate of information on the markets and on the financial health, accounting standard of the companies; Third are emerging market specific risks such as liquidity risk, political risk, macroeconomic instability. Chambet and Gibson (2008) suggest that

the diversification benefits of investing in emerging markets are limited and threaten by the high level of economic instability and financial contagion in these economies. They study the behavior of emerging market's excess returns and find that emerging stock markets remained partially segmented during the 1990s and emerging market risk premium is high. The level of integration is time-varying over the sample period, and during financial crisis the levels of financial integration in emerging markets dropped sharply, but recovered quickly afterwards. Thus, even when holding a diversified portfolio of emerging markets' stocks, the authors suppose that investors will still be subject to a certain degree of ''systematic emerging market risk'' .

In a nut shell, previous literature investigating in performance of emerging markets are mainly focusing on the diversification benefits investors can obtain by investing in these markets, and the systematic risk they need to take accordingly. The conclusions are that emerging markets are continuity providing diversification benefit to investors in developed countries, however the high volatility, the economic instability and the non-negligible systematic emerging market risk should be taking in to consideration as the prices one needs to pay on investing in these markets.

2.2 Measuring fund performance: Jensen's Alpha

Jensen's Alpha is a risk adjusted performance measurement developed by Michael C. Jensen in his paper <The performance of mutual funds in the period 1945-1964>, and later on, many studies focusing on fund performance used this method to illustrate their findings.

In Jensen's paper, he aims at finding a method to measure the predictive ability of fund managers on obtaining returns through successful prediction of security prices which

are higher than those which we could expect given the level of riskiness of his portfolio (Jensen, 1967). He developed the model of his paper basing on CAPM model:

$$\tilde{R}_{jt} - R_{Ft} = \alpha_j + \beta_j[\tilde{R}_{Mt} - R_{Ft}] + \tilde{u}_{jt} \quad (1)$$

Where:

R_{jt} refers to the annual continuously compounded rate of return on the j fund during time t;

R_{Ft} refers to risk free interest rate in time t;

α_j refers to performance measure of mutual fund j;

β_j refers to the estimate of the systematic risk of the mutual fund portfolio j;

R_{Mt} refers to the estimated annual continuously compounded rate of return on the market portfolio M for time t;

and u_{jt} refers to error term.

Jensen interprets that if the fund manager has an ability to forecast security prices, the intercept α_j will be positive, and if the manager is not doing as well as a random selection buy and hold policy, the α_j will be negative. If the α_j is not statistically different from zero, there is no unique return.

Jensen's alpha has been widely used in evaluating funds performance, because it is one of the ways that not only look at the overall return of the fund, but also take fund's level of risk into account and then to see if it is able to earn excess return. As many previous paper did, in this paper, Jensen's alpha is taken as the most important estimate of the regression, and its sign and magnitude are focused in the study.

2.3 Performance of emerging market mutual funds

Some but not many studies have been conducted in order to examine the performance of emerging market funds, such as mutual funds, hedge funds and bond funds. For investors in developed markets, mutual funds have been one of the most important vehicles for investing in emerging markets. As mentioned, Berry et al (1998) indicate that because of the barriers for foreign investors investing in emerging market stocks, such as different languages, accounting systems, investors tend to buy shares of professionally managed funds. Most of emerging market funds are open-end equity funds (Kaminsky et al., 2001). Bekaert and Urias (1996) examine the diversification benefits from holding UK and US based closed-end emerging market country funds and compare them to the diversification benefits associated with the IFC Investable indices using mean variance spanning tests. They conclude that the UK based emerging market funds provide investors significant diversification gains in unconditional test, while comparable the US funds do not. Besides, the IFC indices corresponding to the funds yield unequivocal diversification benefits. If using lagged fund premiums as conditioning information, then both the UK and the US emerging market funds produce significant returns.

Kotkatvuori-Örnberg et al (2011) examine the geographical focus in emerging market and hedge fund performance. They suggest a way to pick outperforming emerging market hedge funds by investing in funds which have reported geographical focuses, because they assume that market focus likewise to information advantage, and information advantage leads to better performance, especially for emerging markets (Teo, 2009). They use both live and dead hedge funds of emerging markets from 1995 to 2009 and create 5 different equally-weighted portfolios according to the fund geographical information. Furthermore, a “Focus” portfolio including all hedge funds indicating their focuses is used, and another portfolio including hedge funds indicating their investment geography as “Emerging Markets” is referred as “Global” portfolio.

The regression results (Jensen's alpha) indicate that portfolio of emerging market hedge funds with geographic focuses can outperform their underling stock markets, while the Global portfolio can not. In addition, they make further study on the performance before 2008 financial crisis and find that performance of emerging market hedge funds is stronger before the crisis, both Focus and Global portfolios yield abnormal returns. The authors mention that their study could be extend to the market of emerging market mutual funds, and we will do the extension in our paper.

Borensztein and Gelos (2003) show evidence that country focused funds have information advantages over global funds, because their fund flows can precede global fund flows. Therefore, it is also reasonable to think that geographical focused funds, such as emerging market focused funds, are able to lead to better performance. Huji and Post (2011) do research on the persistence of emerging market funds performance using a rank portfolio approach. they rank funds by monthly return over the past quarter and evaluate their performance in the following month, as the consequence, the return spread between the top and bottom funds is 7.26% per annum. Moreover, they also investigate factors that can explain emerging markets funds persistence performance pattern. They conclude that emerging markets stocks exhibit a strong size and value effect, and momentum strategies are highly profitable in emerging markets, but emerging market funds is not affected by the factors. Overall, the authors provide evidence that emerging market mutual funds based on the US market display better performance than funds investing locally, the former generate a positive Jensen's alpha while the latter does not. They also emphasis that their results are consistent with the theory of emerging markets are less efficient than developed markets, hence there are more opportunities to obtain abnormal returns. Inspiring by this paper, a rank portfolio approach is used in this paper by ranking the funds basing on the Morningstar rating. To our knowledge, this is the first paper that examine the performance of mutual funds belonging to the Morningstar Emerging Market Categories.

Polwitoon and Tawatnuntachai (2008) investigate emerging market bond funds over a ten-year (1996-2005) cycle. They compare the performance of funds against market indices as well as US domestic bond funds with similar risk characteristics and US based global bonds. One interesting thing of this paper is the author create eight regression models according to the different indices selected into the model. For instance, the bond and stock model comprises five bond and stock factors; the region model includes five regional bond indices. They use both Sharpe ratio and Jensen's alpha to measure the returns, and conclude that emerging market funds generally underperform benchmark indices such as the regional and country bond indices and some broad-based indices such as Lehman Brother Emerging Market World All Series. However, the funds outperform comparable domestic bond funds and global bond funds on both total and risk-adjusted returns. Besides, they also investigate other factors that may explaining the fund performance, and find that return difference between emerging and domestic and global bond funds are mainly explained by the difference in characteristics between emerging and the latter two bond markets. In addition, they also find that the emerging market bond funds also provide international diversification benefits to US and international bond and equity portfolios. By adding 20% emerging market bond funds into portfolios, it can enhance the portfolio returns by 0.81% to 1.53% per year without increasing risk.

Ackermann et al. (1999) and Liang (1999) find that emerging market mutual funds perform lower than the market indices. Abel et al (2004) study the UK based emerging unit trust performance between January 1993 and December 2003, and they find that there is no evidence of superior performance by the average fund of by individual funds. Eling and Faust (2010) examine the performance of mutual funds and hedge funds in emerging markets from 1995 to 2008. They use six performance measurement models to identify the return and Jensen's alpha generated by hedge funds and mutual funds investing in emerging markets. One of their contribution is the design of an emerging

market factor model which contains both equity and bond market indices as well as the credit spread as the factors. This EM generate very high adjusted R-squared compared with other models using in the paper. The regression result indicate that some hedge funds generate significant positive alpha, but most of the mutual funds can not outperform benchmarks. In addition, the authors also measure the fund performance in different sub-periods and find that mutual funds keep under perform market benchmarks in all the sub-periods, and the hedge funds perform better than mutual funds on average. Huang and Wang (2013) also generate empirical examination on the performance of hedge funds during 2007-2008 financial crisis period and conclude that there is little evidence that abnormal returns can be obtained during market downturns.

One of the most recently finished paper by Basu and Huang-Jones (2015) give the most newest finding on emerging market diversified mutual funds based in developed countries, and they emphasize in their paper that these funds mainly aim to offer diversification benefits to investors rather than seek superior risk adjusted returns through active fund management. Their research period is from 2000 to 2010, and they are the first to analyze emerging market mutual funds since the onset of global financial crisis. They use the CAPM model and the Fama and French model to measure the performance, and they also separately evaluate the surviving funds and non-surviving funds. According to their evidence, on average emerging market diversified funds do not outperform their market benchmarks, and the persistence in performance is mainly attribute to the under-performing funds. During the crisis period, top performers have higher alpha relative to the full sample period, but the rest quartiles have worse performance. The authors also suggest the answers to the question why do most diversified emerging market funds fail to outperform their market benchmarks. First, it might because due to the fact that emerging markets are now more and more informationally efficient than before, hence as fund managers, it becomes harder and harder to beat the market; Second, many studies show that domestic fund managers

have information advantages over their foreign counterparts (Bialkowski and Otten, 2011), and since the funds studied in their paper are domiciled in developed countries and managed by foreign managers, they might be at a disadvantage in exploiting any potential inefficiency in emerging markets. However, Huang (2001) makes research on fund companies with oversea offices in Pacific Rim area, and find that affiliated funds do not outperform non-affiliated funds. Hence local research offices with domestic information advantages seem do not contribute superior investment performance.

Basu and Huang-Jones only examine the diversified mutual funds but not the country or region specific funds, and as mentioned earlier, according to Kotkatvuori-Örnberg et al (2011), with geographical focuses, funds might perform better than those without. Therefore in this paper, as a comparison purpose, the performance of both funds with (Focus) and without (Diversified) geographical focuses are examined.

2.4 Moningstar and its fund performance rating system

Morningstar is a leading provider of independent investment research in many countries. It provides data for stocks, mutual funds, as well as real-time global market data. Their products and services serve individual investors, asset managers, retirement plan providers and sponsors. In 1984, the founder of Morningstar realized that investors lacked the information to make decisions about which investments best fit their plans. At the same time, he saw mutual funds growing in popularity. Hence, he established the company aiming at helping investors reach their financial goals. Although the roots of the company are in mutual funds, nowadays they are collecting and analyzing data for wider ranges on stocks, hedge funds, ETFs etc.[3] In 1985, Morningstar introduced the Star RatingTM method to investors and advisors to evaluate funds performance. Using a scale of one to five stars for both return and risk, the rating allowed investors to easily

[3] See Morningstar website: About us. <http://corporate.morningstar.com/US/asp/subject.aspx?xmlfile=177.xml>

evaluate a fund's past performance within six broad asset classes, and it also introduced the concept of risk- and cost-adjusted return to the investors. Later on, in 1996, Morningstar created the Category RatingTM, which rated funds within their smaller and more focused Morningstar Categorie. In 2002, Morningstar enhanced the star rating with new peer groups, and the measure of risk-adjusted was also improved (See Appendix 2).[4]

Morningstar and its rating system have been widely disputed among investors and scholars, and the main discussion is about the predictive value of their star ratings. From investor's point of view, the Morningstar star ratings is freely available, risk-adjusted performance measure which is updated monthly and its one to five star rating system is easy to understand (Guercio and Tkac, 2008). Although Morningstar claim that their ratings is a quantitative assessment of fund's past performance and is not a sufficient basis for investment decisions, investors still tend to put money into funds with high Morningstar ratings while low rating funds are suffering cash outflows. Blake and Morey (2000) conduct a study to examine the Morningstar rating system as a predictor of mutual fund performance. They find that low rating funds generally indicate poor future performance, but highest ratings do not outperform the next to highest and median-rated funds. Guercio and Tkac (2008) study the influence of Morningstar rating systems on mutual fund flow, and they find out that investors view the ratings as informative quality measures, especially when funds performance drops below one-third of funds to a three- star rating, they will change their investment allocation immediately as response.

However, some of the papers find no evidence of funds with high ratings perform better than funds in low rating groups. Gerrans (2006) indicates in his paper that in the Australian market, there is no evidence to support a positive relationship between fund

[4] See Morningstar website: Rating Methodology:The Morningstar Rating™ for funds. <http://corporate.morningstar.com/US/documents/MethodologyDocuments/FactSheets/MorningstarRatingForFunds_FactSheet.pdf>

ratings and four commonly used performance measures (raw return, alpha one factor, alpha four factors and sharp ratio) for two of the largest Morningstar managed fund categories.

In this paper, Morningstar Star Rating is used to sort data into different portfolios, aiming at investigating on the relationship between fund ratings and fund performances measured by Jensen's alpha. Five Morningstar Category ratings focusing on emerging market equity and bond funds are used.

2.5 Overview of the related studies

As Huji and Post (2011) address in their paper, research on the performance of emerging market mutual funds has generally been lacking due to limited data availability, therefore many important questions remain unanswered. The inconsistency of the previous literature may cause by different period the studies have chosen to investigate, or cause by different methodologies the authors selected to use. In this paper, newly data start from 2004 and end in 2014 is used, and Kotkatvuori-Örnberg, Nikkinen and Peltomäki (2011)'s study of performance of hedge funds is extended to performance of mutual funds with geographical focus. They indicate that geographical focus in emerging markets may be more important due to the reason the markets are not as developed and transparent as the developed economies, hence this paper will follow their idea and give a closer look at mutual funds in emerging markets with specific geographical focus, and to see how they perform before, during and after the financial crisis in the early 21st century. For comparison purposes, emerging market funds without geographical focus is investigated, in order to see if assets location really matters. Besides, funds are sorted into different portfolios according to the Morningstar ratings, for the sake of examining the power of the Morningstar rating system. Eling and

Faust (2010)'s method is imitated when choosing market benchmarks using in the regression model.

3 US BASED EMERGING MARKET MUTUAL FUNDS

3.1 Mutual funds

Mutual funds were first introduced to the public in 1774 in Europe, and later in the U.S.. Nowadays, the U.S. Securities and Exchange Commission defined mutual funds as a type of investment company that pools money from many investors and invests the money in stocks, bonds, money-market instruments, other securities, or even cash.

There are mainly 3 types of mutual funds in the market:

Open-ends funds: There are no restriction to the amount of shares the fund will issue in the market, and investors have the right to sell their shares in hand whenever they want to. The majority of mutual funds are open-ends funds. In recent years, a type of mutual fund called Exchange-traded funds (ETFs) are popular among investors. The majority of ETFs are open-end fund.

Close-ends funds: Only issued once to the public when they are created via IPOs (initial public offerings). Hence, the amount of shares are limited. This type of funds are traded on stock exchanges, and investors cannot sell back their shares to the fund, but to other investors in the market.

Unit investment trusts(UITs): Only issued once to the public when they are created through IPOs. There is no fund mangers and the portfolio of this type of funds do not change after their creation.UITs have a limited life span, investors can choose to redeem their trusts to the fund at anytime, or wait for the trusts matured.

Mutual funds are also classified by their investment portfolios, investment strategy and objectives. For example, according to investment portfolios, there are stock funds, index funds, bond funds and money market funds; according to market capitalization size of the companies which mutual funds invest in, there are large-cap funds, small-cap funds and mid-cap funds; and considering these companies' performance (e.g.growing speed

and dividend strategy), mutual funds are sorted into value funds and growth funds.In addition, inherited the feature of collective investment scheme, mutual funds usually target on specific industry sectors such as Health and Technology, or target on special geographic regions, such as Latin America and China Region.

Taking a closer look at mutual fund “Fidelity Advisor China Region A LW”, 95.55% of its asset are allocated in stocks, therefore this is a so called stock fund; 95.79% of the investment are made in Great Asia region and mainly in China, therefore it is an emerging market mutual fund; it covers many industry sectors, for instance, 27% in technology, 26.25% in consumer cyclical and 15,82% in financial service; and according to its investment style, it is a large-cap and growth mutual fund.

In this paper, mainly open-ends stock funds and bond funds are analyzed.

3.2 Mutual funds investing in emerging markets

In recent decades, asset management industry of emerging markets develops rapidly. There are many kinds of funds focusing on emerging markets but locate in mature markets such as the US market and the UK market. Without professional skills, individual investors are able to allocate their money in emerging markets simply by purchasing these type mutual funds in their own countries, and professional fund managers will determine the investment strategies and portfolio allocation ultimately. For instance, if one investor living in Finland is interested in investing in India market, but have no knowledge about which India stock to go for, he can then choose a mutual fund trade in NASDAQ under the category of “India Equity” ,instead of searching in the India stock market where he is not familiar with. We take the mutual fund “DMS India MidCap Index A” as an example, in its prospectus and SAI (statement of additional information) it indicates that “The Fund is designed to invest in stocks comprising the

Index, and as such is expected to have 100% of its assets invested in securities of issuers located in India. Accordingly, in the normal course of business, all the portfolio investments of the Fund will be companies domiciled outside the United States and are not included in American indices such as the Dow Jones Industrials or the S&P 500 Composite."(SAI of DMS India MidCap Index A) By investing in this mutual fund, investors are able to reach many companies in India, and diversify the risk of his investment at the same time.

Nowadays, there are many mature markets-based mutual funds investing in emerging markets just like "DMS India MidCap Index A", and the fund data provider Morningstar sorts these kinds of funds into specific categories according to their geographic information. Morningstar names them as "China Region", "Latin America" "India Equity" and so on. Besides, there is another kind of emerging market fund, which the asset allocation is more complex. Morgningstar gives these funds a category name: "Diversified Emerging Market" , simply because the asset of the fund is allocated to several emerging markets at one time, hence the capital and risk are diversified.

In the paper, the performance of single country or region funds and diversified funds are investigated, and all the funds are US-based mutual funds. Borenztein and Gelos (2003) argue that country specified funds have an information advantage over global funds. Later, Kacperczyk, Sialm and Zheng (2005) examine the performance of mutual funds and conclude that funds with greater industry concentration show better performance on average. As a combination, Kotkatvuori-Örnberg, Nikkinen and Peltomäki (2011) raise up and prove the hypothesis that geographical focuses of emerging market hedge funds would lead to better performance in their paper, and they also speculate that the result maybe applicable to mutual funds as well. Therefore, in this paper, it is necessary to test if this conclusion is applied to mutual fund market.

4 DATA

4.1 Data set

Monthly emerging markets mutual funds month-end data extracting from Thomson Financial Data-stream are used as the data set of the paper, and the time range is from March of 2004 to March of 2014. In addition to the portfolio including all the funds which is named as “Focus”, the data will also be sorted into different sub groups according to their geographic focuses, such as India region, China region, Latin America and so on. We will also investigate funds focusing on diverse emerging markets, which Morningstar sorts in a category named as “Diversified Emerging Market”. This kind of funds aim at investing in multiple emerging markets at the same time, hence their performance is determined by several stock markets in different regions. For example, mutual fund “Alger Emerging Markets A” allocates assets in Asia Emerging (33.13%), Latin America (20.06%), Europe Emerging (3.48%) and Africa/Middle east (5.69%), and the rest 38% invest in developed countries all over the world. The portfolio including this kind of fund is referred as the “Diversified” portfolio.

4.2 Survivorship bias

According to previous studies, mutual funds expose to survivor-ship bias. Survivor-ship bias refers to the tendency of ignoring merged or dead funds in studies, which leads to inaccurate study results. Elton, Gruber and Blake (1996) are the first to study the survivor bias of mutual fund. They indicate in their study that a fund disappear mostly due to its poor performance. If a study only use survive funds, it will overstate the measured performance. Carhart (1997) suggests that survivor-ship bias should be eliminated by taking all the funds into studies, despite of the death of some funds. He

indicates that excluding the deceased fund would bring the aggregate return higher because most of these “dead” funds had under performed benchmarks during a long period of time. Eling and Faust (2010) calculate survivor-ship bias as the difference between all funds returns and only surviving funds returns and the bias they get is 0.223% points per month. In order to mitigate survivorship bias, in this paper the data set includes both surviving and defunct funds. In addition, since there is more funds emerging in recent years, size of the data set changes as well as the time intervals change.

All in all, 6 equally weighted portfolios of geographically different emerging market are formed, they are: Brazil (21 funds), Russia (12 funds), India (74 funds), China (143 funds), Middle East, Eastern Europe and South Africa (19 funds), and Latin America (63 funds). Moreover, the portfolio which including all the funds mentioned above is named as “Focus”. A diversified emerging market portfolio is also formed, it includes 1245 funds, and it is named as “Diversified” in the paper.

4.3 Calculating Returns

Monthly return of the mutual fund is calculated according to the following equation:

$$R_{i,t} = (P_{i,t} / P_{i,t-1}) - 1 \qquad (2)$$

Where :

$R_{i,t}$ refers to return of fund i in month t;

$P_{i.t}$ refers to month-end price of fund i in month t, and

$P_{i.t-1}$ refers to month-end price of fund i in month t-1.

First, the return of each fund in each month is calculated, and then the average return of each month in percentage scale of every country or region is calculated. In this way, the country and region portfolios are generated. The average monthly return of all the funds

including in the “Focus” portfolio is also calculated. In addition, the average return of the “Diversified” portfolio is calculated using the same method.

4.4 Market Benchmarks and descriptive statistics

Eling and Faust(2010) show in their paper that emerging market stock indices successfully capture the specific location or strategy component characteristics of investing in emerging markets. They use MSCI reginal indices, such as MSCI EM Asia, MSCI EM Latin America, to capture the performance of emerging market hedge funds. Kotkatvuori-Örnberg, Nikkinen and Peltomäki (2011) prove in their paper that the use of multiple indexes increases explanatory power of the model, and they use FTSE RAFI emerging index which is a fundamentally weighted-index, and Barclays EM world all series in their model. The FTSE RAFI Index constituents are weighted using a composite of fundamental factors, including total cash dividends, free cash flow, total sales and book equity value. Prices and market values are not determinants of the index weights.[5] Arnott, Hsu and Moore (2005) suggest that fundamental weighting method is more efficient on over-weighting undervalued stocks as well as under-weighting overvalued stocks. By doing so, it helps compensate value bias.

In this paper, the combination of the methods mentioned above is used to obtain regional and country stock and bond indices, and the indices are obtained from MSCI’s website and Thomson Financial Data-stream. For comparison, reason multi-country indices are also used as alternatives, such as the index including emerging economies all over the world in spite of their different geographic locations. The study tries to find out the best model of analyzing the performance of emerging market mutual funds.

[5] See Ground rule for the FTSE RAFI INDEX SERIES.

4-week treasury bill rate (from the US Feral Reserve) is used as the risk free interest rate. Table 1 presents the indices information and Table 2 presents descriptive statistics of the dataset and indices.

Table 1 Market index list

Index	**Definition**
Multi-country Index	
MSCI BRIC Index	Measure equity market performance of the emerging countries: Brazil, Russia, India and China
MSCI Emerging Market Index	Measure equity market performance of 23 emerging markets.
Country/Region Index	
MSCI EM Asia	Measure equity market performance of 8 Asian emerging markets, such as China, Malaysia, Korea, etc.
MSCI EM Latin America	Measure equity market performance of 5 Latin American emerging markets,such as Brazil, Chile, etc.
MSCI EM EMEA	Measure equity market performance of European, Middle Eastern and African emerging markets.
MSCI Brazil	Measure equity market performance in Brazil
MSCI Russia	Measure equity market performance in Russia
MSCI India	Measure equity market performance in India
MSCI China	Measure equity market performance in China
FTSE RAFI US Emerging Market	Fundamentally weighted-index of Emerging Market
Bond Index	
Barclays EM world All Series	Measure bond market performance in Emerging market
Credit Risk	
BAA Yield	Credit rating from Moody's

Table 2 shows that most of the countries mutual funds have positive average returns, except for Brazil and EMEA countries. The highest average return is generated in Latin America (0.854%), and accordingly the market index of Latin America using in this study gives an average return of 1.167%, which is the third highest among the indices. However, the standard deviation of Latin America portfolio is high (5.707), since the

maximum and minimum returns are both the highest/lowest comparing with other country portfolios. The highest market index average return is generated from Brazil (1.341%), Nevertheless, the average mutual fund return of Brazil is only -0.010%, which is the second lowest portfolio return in the study. This conflict result might due to the reason that most of the funds including in the Brazil portfolio are dead funds, hence they drag down the performance of the Brazil portfolio. The focus portfolio (0.277%) yields better average return than the diversified portfolio (0.133%), but its standard deviation is also higher. This result is inline with Kotkatvuori-Örnberg et al (2011)'s finding. •

Table 2 Descriptive statistics for the data

Panel 1 Fund portfolio return								
Portfolio	**FOCUS**	**CHINA**	**BRAZIL**	**EMEA**	**INDIA**	**LATIN**	**RUSSIA**	**DIVERSIFIED**
Mean	0.277	0.625	-0.010	-0.028	0.292	0.854	0.132	0.133
Median	0.404	0.872	0.000	0.000	0.515	0.513	0.296	0.273
Maximum	9.842	16.493	8.793	7.818	15.723	31.770	5.514	5.768
Minimum	-10.285	-15.762	-9.827	-12.408	-12.663	-20.695	-6.939	-7.790
Std. Dev.	2.856	4.959	1.937	2.394	3.503	5.707	1.993	2.058
Skewness	-0.181	-0.192	-0.340	-1.124	0.066	0.852	-0.338	-0.543
Kurtosis	5.518	4.544	12.789	9.612	6.601	10.371	5.059	5.094
Jarque-Bera	32.625	12.762	485.463	245.892	65.453	288.585	23.687	28.039
Probability	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000
Sum	33.528	75.660	-1.237	-3.373	35.272	103.378	16.032	16.063
Sum Sq. Dev.	979.027	2951.339	450.168	687.653	1472.936	3908.333	476.736	508.154
Observations	121	121	121	121	121	121	121	121

Panel 2 Market index return												
	MSCHINA	**MSBRAZIL**	**MSRUSSIA**	**MSINDIA**	**MSLA**	**MSEMEA**	**MSASIA**	**FTSE**	**BARCLAYS**	**BAA**	**EM**	**BRIC**
Mean	1.029	1.341	0.554	1.234	1.167	0.733	0.805	0.978	0.036	-0.195	0.843	0.982
Median	2.166	1.231	1.595	1.353	1.401	1.317	0.926	0.559	0.404	-0.166	0.648	1.272
Maximum	19.312	24.262	30.441	36.628	20.366	17.989	16.544	19.956	8.231	21.477	16.657	22.913
Minimum	-22.778	-32.349	-35.274	-28.557	-31.808	-30.118	-24.158	-26.481	-20.877	-8.469	-27.499	-29.236
Std. Dev.	7.889	9.365	9.962	9.245	7.876	7.540	6.752	7.011	3.001	3.460	6.879	7.965
Skewness	-0.480	-0.255	-0.329	0.020	-0.589	-0.711	-0.447	-0.432	-2.858	1.927	-0.629	-0.456
Kurtosis	3.676	3.812	4.183	4.482	4.888	4.551	3.985	4.359	21.458	14.738	4.741	4.488
Jarque-Bera	6.956	4.628	9.237	11.074	24.956	22.333	8.923	13.073	1882.468	769.507	23.274	15.343
Probability	0.031	0.099	0.010	0.004	0.000	0.000	0.012	0.001	0.000	0.000	0.000	0.000
Sum	124.559	162.270	67.093	149.294	141.256	88.661	97.379	118.339	4.381	-23.568	101.994	118.803
Sum Sq. Dev.	7467.541	10523.480	11908.240	10255.560	7443.664	6822.976	5470.655	5899.236	1080.601	1436.727	5678.692	7613.390
Observations	121	121	121	121	121	121	121	121	121	121	121	121

4.5 Correlation

Table 3 reports the correlation between emerging market mutual funds and market benchmark indices (p-values are given in parentheses). Correlation between mutual funds and traditional stock index is high. The correlation between Focus portfolio and the S&P 500 index is 0.824 and highly significant, so do coefficients of country specific fund portfolios and Diversified portfolio. This result is much more higher than the result from Barry et al (1998)'s paper, their correlation between the emerging market composite index and the S&P 500 index is 0.27 in the period of 1975 to 1995, and 0.41 from 1990 to 1995. Buchanan et al (2011) also report correlation between emerging markets under different laws and the S&P 500 index in the period of 1998 to 2006, and they find that countries under French laws have the lowest correlation with developed countries (0.1585), whereas countries under the English laws have the highest correlation (0.4557). The increase of the correlation between emerging markets and developed markets might be interpreted as because of the developing of integration of global financial market nowadays, and the relationship among different markets is closer. As the consequences, the diversification potential of investing in emerging markets recently is smaller than previous decades, so does one can observe that the 2008 global financial crisis has exert huge impact on emerging markets.

In line with Eling and Faust (2010), the correlation between mutual funds and credit spread is mostly significant but negative. They thus confirm that emerging market funds exhibit credit risk. What's more, the correlation between mutual funds and country stock market indices are mostly positive and significant, so do the correlation between mutual funds and FTSE RAFI US Emerging market index, mutual funds and Barclays bond index. However, different with Eling and Faust's finding, some of the correlations between mutual fund returns and multi-country index returns such as the MSCI EM are insignificant, for example the correlation between Latin America and MSCI Emerging

Market, and the correlation between China and the MSCI BRIC. Even the correlation between Latin America mutual funds and MSCI Latin America Index is insignificant.

Table 3 Correlation between mutual fund returns and market indices

	Focus	CHINA	BRAZIL	EMEA	INDIA	LATIN	RUSSIA	DIVERSIFIED
MSCICHINA	0.761	0.887	0.413	0.506	0.669	0.716	0.470	0.624
	(0.000)	（0.000）	（0.000）	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MSCIBRAZIL	0.732	0.710	0.485	0.559	0.675	0.892	0.584	0.670
	（0.000）	0.000	（0.000）	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MSCIEMASIA	0.147	0.032	0.160	0.218	0.161	0.097	0.223	0.211
	（0.108）	（0.726）	（0.080）	(0.016)	(0.077)	(0.290)	(0.014)	(0.020)
MSCIEMEMEA	0.175	0.066	0.211	0.221	0.179	0.100	0.215	0.213
	（0.055）	（0.471）	（0.020）	(0.015)	(0.049)	(0.274)	(0.018)	(0.019)
MSCIEMLA	0.198	0.085	0.254	0.269	0.164	0.095	0.224	0.258
	（0.029）	（0.355）	（0.005）	(0.003)	(0.073)	(0.299)	(0.014)	(0.004)
MSCIINDIA	0.747	0.730	0.428	0.578	0.911	0.681	0.470	0.641
	（0.000）	（0.000）	（0.000）	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MSCIRUSSIA	0.709	0.667	0.450	0.631	0.638	0.759	0.737	0.671
	（0.000）	（0.000）	（0.000）	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MSCIBRIC	0.169	0.060	0.208	0.238	0.156	0.095	0.238	0.235
	（0.064）	（0.514）	（0.022）	（0.009）	(0.088)	(0.300)	(0.009)	(0.009)
MSCIEM	0.173	0.055	0.203	0.239	0.174	0.103	0.229	0.232
	（0.058）	（0.550）	（0.026）	（0.008）	(0.057)	(0.261)	(0.012)	(0.011)
S&P	0.824	0.721	0.637	0.791	0.750	0.729	0.656	0.827
	（0.000）	（0.000）	（0.000）	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BARCLAYS	0.764	0.634	0.626	0.754	0.711	0.646	0.659	0.790
	（0.000）	（0.000）	（0.000）	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FTSE	0.842	0.852	0.531	0.679	0.795	0.847	0.647	0.776
	（0.000）	（0.000）	（0.000）	（0.000）	(0.000)	(0.000)	(0.000)	(0.000)
BAA	-0.418	-0.400	-0.261	-0.342	-0.419	-0.369	-0.215	-0.385
	（0.000）	（0.000）	(0.004)	(0.000)	(0.000)	(0.000)	(0.018)	(0.000)

4.6 Multicollinearity

When the independent variables are correlated among themselves, intercorrelation or multicollinearity among them is said to exist (Neter et al, 1990). The effect of multicollinearity can be categorized in terms of estimation or explanation, and in either way it decreases the ability to predict dependent measure as well as ascertain the relative roles of each independent variable (Hair,Jr. et al, 2010).

There are two most common measures for assessing the issue, that is checking the tolerance or the Variance Inflation Factors. Tolerance is defined as the amount of variability of the selected independent variable not explained by the other independent variables (Hair,Jr. et al, 2010). It is calculated as $1-R^2$, where R^2 is the amount of that independent variable that is explained by all of the other independent variables in the regression model. The VIF is calculated as the inverse of the tolerance value, that is:$1/(1-R^2)$. A common cutoff threshold is a tolerance value of .01, which corresponds to a VIF value of 10 (Neter et al, 1990, Tabachnick and Fidell, 2007, Hair,Jr. et al, 2010).

The EM model using in this paper following Eling and Faust (2010) and Kotkatvuori-Örnberg et al (2011) contains nine independent variables in total, it is necessary to examine the multicollinearity of the model. Table X shows the VIFs of each independent variable. Only the VIF of the FTSE RAFI emerging index exceeds the cutoff value of 10, and it is might because that the FTSE RAFI emerging index is calculated as the weight of fundamental factors including total cash dividends, free cash flow, total sales and book equity value of index constituents in several emerging markets, therefore it is to some extent correlated with country specific indices which are calculated based on market prices and values of the same index constituents in emerging markets.

Table 4 VIFs of independent variables

Variable	Coefficient Variance	VIF
Jensen's Alpha	0.067	NA
MSCHINA	0.001	4.038
MSBRAZIL	0.001	3.331
MSRUSSIA	0.001	3.301
MSINDIA	0.001	4.128
MSEMLA	0.001	6.913
MSEMEA	0.001	8.047
MSASIA	0.001	6.913
RAFI	0.004	11.996
BOND	0.006	2.018
BAA	0.002	1.379
AR(1)	0.014	1.740

In Kotkatvuori-Örnberg et al (2011)'s paper, they use the FTSE RAFI index to count for the passive investing strategy of hedge fund. They provide both results with and without the FTSE RAFI index, in order to evaluate the effect of only using market benchmarks. Passive security selection is also an alternative for mutual fund management, hence considering the function of the index, it is rather to keep it in the regression model than omit it. Nonetheless, the regression result without the RAFI index will also be given in the table of EM model.

5 METHODOLOGY

5.1 Performance measurement models

The single factor CAPM model (3) is commonly used in performance evaluation in the 1980s. However, many studies report that the betas of the Sharpe (1964)–Lintner (1965) CAPM shows little relation to the cross-section of average returns on US common stocks. Therefore, in order to improve the portion of variance explained by the regression, multifactor model have been created and widely used in later studies.

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{\text{it}} \tag{3}$$

Authors identified many factors such as size of company, E/P ratio, leverage and book/market to explain the cross-section of average returns. Fama and French (1992) three factors model is widely applied for many years in stock market performance evaluation:

$$R_{it} - R_{ft} = \alpha_{im} + \beta_{im}(R_{mt} - R_{ft}) + \beta_{iSMB}SMB_t + \beta_{iHML}HML_t + \varepsilon_{\text{it}} \tag{4}$$

Where:

R_{it} refers to the return of fund i in month t;

R_{ft} refers to the risk-free return in month t;

α_{im} refers to the performance measure comparing to the market;

β_{im}, $\beta_{iSMB}$and β_{iHML} are the slopes of the regression;

SMB_t refers to the difference between small and big companies;

HML_t equals to high book to market ratio minus low book to market ratio;

and ε_{it} is an error term.

Carhart (1997) adds one more factor, the momentum (MOMt) factor into the Fama and French three factors model in order to test the persistence of stocks:

$$R_{it} - R_{ft} = \alpha_{im} + \beta_{im}(R_{mt} - R_{ft}) + \beta_{iSMB}SMB_t + \beta_{iHML}HML_t + \beta_{iMOM}MOM_t + \varepsilon_{it} \quad (5)$$

However, mutual funds include many asset classes rather than only stocks, and they employ dynamic trading strategies as well. Hence, three factors model and Carhart momentum model have been extended to capture different asset classes by Fung and Hsieh (1997). They define eight standard asset classes to analyze fund performance, where the factors are equity indices, bond indices and currency indices:

$$\begin{aligned} R_{it} - R_{ft} &= \alpha_i + \beta_{iMSUSAM}MUSUAM_t + \beta_{iMSWXUS}MSWXUS_t \\ &+ \beta_{iIFCOMP}IFCOMP_t + \beta_{iUSMGUSRI}USMGUSRI_t \\ &+ \beta_{iUSMGEXRI}USMGEXRI_t + \beta_{iUSD}USD_t \\ &+ \beta_{iECUSD1M}ECUSD1M_{t-1} + \beta_{iGOLDBLN}GOLDBLN_t + \varepsilon_{it} \end{aligned} \quad (6)$$

Where:

MUSUAM is the MSCI North American equity index;

MSWXUS is the MSCI non-US equity index;

IFCOMP is the IFC Emerging Market equity index;

USMGUSRI refers to the JP Morgan US Government bond index;

USMGEXRI refers to the US Non-government bond index;

USD equals to US dollar Federal Reserve Traded Weighted currency index;

ECUSD1M is the one-month Eurodollar Deposit Return of previous month;

and GOLDBLN is the London morning fixing index.

Moreover, Capocci and Hubner (2004) use return of the Goldman Sachs Commodity Index (GSCI) instead of gold index to exam the performance of hedge funds, because they argue that funds may not invest solely in gold among commodities. In Huji and

Post (2011)'s paper, the authors consider all the factors mentioned above to generate their model. Further more, they take commodities,currencies and countries exposures factors into account.

5.2 Performance measurement model capturing geographic characteristic

However, non of the above mentioned models captures the specific location characteristics of investing in different emerging markets. In order to fill this cap, Eling and Faust (2010) extend these models by using various emerging market stock indices provided by MSCI, and various emerging market bond indices provide by JP Morgan in their formula to capture the geographic characteristic. In addition, they explain that an asset class factor model should be able to explain where the fund invests (the location component) and how it invests (the strategy component). They also report in their paper that the main geographic area in which funds are reported to be active are Asia/Pacific excluding Japan, Latin America, and Eastern Europe. Among theses funds, 70% of the funds report invest in equities and 19% report investing in bonds. Therefore, they design an emerging market factor model which captures the two main investment style of investing in emerging market funds (equities and bonds) by using three stock market indices and there bond indices with lag of one month to capture the possible auto-correlation. Moreover, they consider that credit spread is relevant with hedge funds investing in corporate bonds, hence they add one more credit risk premiums factor. Their model is as follow:

$$
\begin{aligned}
R_{it} - R_{ft} = {} & \alpha_i + \beta_{iMSEMFA} MSEMFA_t + \beta_{iMSEMEA} MSEMEA_t \\
& + \beta_{iMSEFLA} MSEFLA_t + \beta_{iJPMPASI} JPMPASI_t \\
& + \beta_{iJPMPEUR} JPMPEUR_t + \beta_{iJPMAPLAT} JPMAPLAT_t \\
& + \beta_{iJPMPASIL} JPMPASI_{t-1} + \beta_{iJPMPEURL} JPMPEUR_{t-1} \\
& + \beta_{iJPMPLAT} JPMPLAT_{t-1} + \beta_{iBAAMTSY} BAAMTSY_t + \varepsilon_{it}
\end{aligned}
\qquad (7)
$$

Where: MSIMFA refers to the MSCI emerging market Asia Index;
MSEMEA refers to the MSCI Emerging Market Europe Index;
MSEFLA refers to the MSCI Emerging Market Latin America Index;
JPMPASI is the JP Morgan Emerging Market Asia bonds;
JPMPEUR is the JP Morgan Emerging Market Europe bonds;
JPMAPLAT is the JP Morgan Emerging Market Latin America bonds;
and BAAMTSY is the credit risk premiums BAA yield.

This model very well captures the unique location characteristics of emerging market funds, it achieves higher adjusted R-squared than models mentioned above. Similarly, Kotkatvuori-Örnberg, Nikkinen and Peltomäki (2011) construct their model to study the performance of emerging market hedge funds by using several geographical markets benchmarks. Beyond that, they apply the FTSE RAFI emerging index to account for passive security selection, and conclude that it is well founded. Their model is as follow:

$$r_p - r_f = \alpha + \beta_i \sum_{n=1}^{N} (r_i - r_f) + \beta_{p,RAFI}(r_{RAFI} - r_f) + \beta_{p,b}(r_b - r_f) + \varepsilon \qquad (8)$$

Where:
r_p defines the return of a hedge fund portfolio;
r_i defines the return of a geographical stock index;
r_f defines the risk-free rate; r_m defines the return of an emerging market stock index;
r_b defines the return of an emerging market bond index;
and r_{RAFI} defines the return on the FTSE RAFI emerging index, which is a fundamentally weighted-index.

In this paper, a combination model of the two above mentioned models is generated in

order to evaluate the performance emerging market funds, and it is expected the new model will capture the specific geographical characteristics of the funds well.

5.3 EM model of the study

Imitating Eling and Faust (2010), regional and country equity indices are used as factors of the model. Since the paper is mainly focus on mutual fund investing in BRICS countries, Latin America, Eastern Europe and Middle East, emerging market indices are collected accordingly. Usually, there are two ways to select the regression variables, either we use stepwise regression technique to find out the most relevant variables, or we directly give a list of variables which are economically relevant. In this study, firstly, a list of variables including region, country and multi-countries indices is given, and then the indices are applied to the regression model separately in order to find out which level of the market benchmarks fits the study better. The market index of BRIC countries (BRIC index) and the market index of whole emerging market (EM index) are considered as the first level factors, and are referred as “multi-countries factor”, because these two indices contain information of emerging markets from all over the world. Second, indices focusing on Latin America, China and Russia are taken as the second level factors and are referred as “region/country factor”, since these indices only focus on a specific region or country.

Following Kotkatvuori-Örnberg et al (2011), the FTSE RAFI Index is also applied in the model, because this index is the most commonly used benchmark in fund market. What is more, the Barclays EM World All Series index is used to capture the influence of bond market on mutual funds, and BAA Yield is used to capture the influence of the credit risk.

Hence,the complete model of the paper is as follow:

$$r_m - r_f = \alpha + \sum_{i=1}^{I} \beta_i (r_i - r_f) + \beta_{RAFI}(r_{RAFI} - r_f) + \beta_{bond}(r_{bond} - r_f) + \beta_{baa} baa + ar(1) + \varepsilon \quad (9)$$

Where:

r_m refers to the monthly return of a country focused mutual fund portfolio (Focus), or return of a geographical diversified mutual fund portfolio (Diversified);

r_f refers to the risk-free interest rate;

α refers to the performance measure (Jensen's Alpha). If it is significantly positive, then it is concluded that the portfolio outperform market benchmarks; if it is significantly negative, then we conclude that the portfolio underperforms market benchmarks;

r_i refers to the return of a country stock index, or a multi-country market stock index;

r_{RAFI} refers to the return of the RAFI index;

r_b refers to the return of a bond index;

baa refers to the credit spread BAA index;

and Ɛ refers to the error term.

In addition, first-order serial correlation is considered using AR(1) term, and white test is applied to compute the standard error. We refer this model as "EM model" in the following content.

5.4 Sub-periods

Kotkatvuori-Örnberg et al (2011) prove in their paper that emerging market hedge funds perform much stronger before the 2008 financial crisis. Basu et al (2015) indicate that comparing to the whole sample period, emerging market mutual funds perform worse during the global financial crisis period, and only the top quartile is able to yield higher Jensen's alpha.

By selecting the sub-period, it is able to evaluate the impact of the global crisis and the volatile condition of developed markets on the performance of emerging markets. One may cast doubt on whether emerging market mutual funds react to the turmoil strongly, and recover fast as the IMF stated that “Emerging markets drive global recovery”. The whole sample period are divided into three time intervals, they are:

2004-2006: before the global financial crisis;

2007-2008: during the global financial crisis;

and 2009-2014: recovering from the crisis.

6 EMPIRICAL RESULTS

6.1 Performance measurement results of period 2004 to 2014

6.1.1 CAPM model

For comparison reason, the CAPM model is firstly used to examine the funds performance, and then the EM model of this paper is applied. Table 4 displays the CAPM regression result of the “Focus” and the “diversified” emerging market mutual fund portfolios for the whole sample period.

As shown in Table 4, both “Focus” and “Diversified” portfolios underperform the S&P index during period 2004-2014, because the alphas are negative and highly statistically significant. The alpha of the “Focus” portfolio (-0.636%) is smaller than the alpha of the “Diversified” portfolio (-0.898%), which indicate that mutual funds with specific geographical focuses perform better than funds invested in multiple markets. This is inline with the conclusion of Kotkatvuori-Örnberg, Nikkinen and Peltomäki (2011), geographical focused funds have information advantage, therefore they have the chance of outperforming funds without geographic indicating.

However, the explain power of the CAPM model is low, the adjust R-squared is only 0.683 for the Focus portfolio, and 0.727 for the Diversified portfolio. This result is consistent with Eling and Faust (2010)’s result, in their paper, the R-squared of the CAPM model is only 0.60.

Table 5 Regression result of CAPM model in 2004-2014

2004-2014	CAPM model			
Portfolios	**Focus**		**Diversified**	
	Coef	**t-Stat**	**Coef**	**t-Stat**
Jensen's Alpha	-0.636**	-2.966	-0.898***	-3.941
S&P	0.577***	12.448	0.434***	12.637
AR(1)	0.166*	1.565	0.414***	4.643
R-squared	0.688		0.731	
Adjusted R-squared	0.683		0.727	
Akaike info criterion	4.109		3.581	
Schwarz criterion	4.179		3.651	
Durbin-Watson stat	2.006		2.092	
F-statistic	129.117		159.117	
Prob(F-statistic)	0.000		0.000	

Note: ***.** and * denote statistically significant at 0.1%, 1% and 5% respectively.

6.1.2 EM model with multi-country index

Next, the EM model with multi-country index is applied in order to investigate the funds performance. Table 5 displays the regression result and we find that it is similar to the result from the CAPM model. Non of the portfolios yield positive return, and still the "Diversified" portfolio performs poorer than the "Focus" portfolio. The RAFI and Barclays variables work well in the regression, their coefficient are all statistically significant at 0.1% level. The adjust R-squared increase to 0.800 and 0.820 for the model with RAFI index. However, the coefficients of multi-country indices MSEM is insignificant, therefore one may conclude that this index does not fit well the data using in the paper.

Table 6 Regression result of EM model with multiple-region indices as control variables in 2004-2014

2004-2014	EM model				EM model without RAFI			
Portfolios	**Focus**		**Diversified**		**Focus**		**Diversified**	
	Coef	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**
Jensen's Alpha	-0.718**	-3.250	-1.027**	-3.183	-0.221	-0.966	-0.544*	-2.323
MSEM	0.008	0.460	0.010	0.886	0.001	0.034	0.010	0.492
RAFI	0.311***	12.194	0.230***	11.166	-	-	-	-
BOND	0.247**	2.723	0.147**	2.681	0.698***	7.753	0.560***	5.940
BAA	-0.043	-0.859	-0.036	-1.165	-0.043	-0.648	-0.036	-0.688
AR(1)	0.274*	2.478	0.648***	8.834	-0.016	-0.140	0.202*	1.809
R-squared	0.808		0.828		0.591		0.645	
Adjusted R-squared	0.800		0.820		0.576		0.632	
Akaike info criterion	3.674		3.186		4.415		3.894	
Schwarz criterion	3.813		3.325		4.531		4.010	
Durbin-Watson stat	2.121		2.507		2.007		2.012	
F-statistic	95.995		109.677		41.465		52.124	
Prob(F-statistic)	0.000		0.000		0.000		0.000	

Note: ***.** and * denote statistically significant at 0.1%, 1% and 5% respectively.

6.1.3 EM model with country/region indices

Table 6 show the regression result of the EM model with country and region indices as control variables. The alphas remain negative and significant at 0.5% level. The explanation power of the model increases again to 0.826 when testing the "Focus" portfolio, and the adjust R-squared of "Diversified" portfolio improves more (from 0.819 to 0.834). In addition, the results also indicate that mutual funds with geographical focus perform better than mutual funds invest in diversified countries, since the abnormal return of the "Focus" portfolio is -0.724% and it is smaller than the alpha of the "Diversified" portfolio (-1.029%).

So far one can draw the conclusion that during the time period 2004-2014, both emerging market mutual funds with and without specific geographical focuses under

perform their market benchmarks. In other words, the mutual funds yield lower returns than their underlying equities and bonds. In Eling and Faust (2010) paper, their analyzing period is from 1995-2008, and the abnormal return of the mutual funds in this time interval is -0.23%. They also provide regression in different sub-periods, for example, from April 2000 to December 2006, the alpha is -0.3% and statistically significant at 10% level; the alpha of January 2007 to August 2008 is -0.04%, but not statistically significant.

Table 7 Regression result of EM model with country and regional indices as control variable in 2004-2014

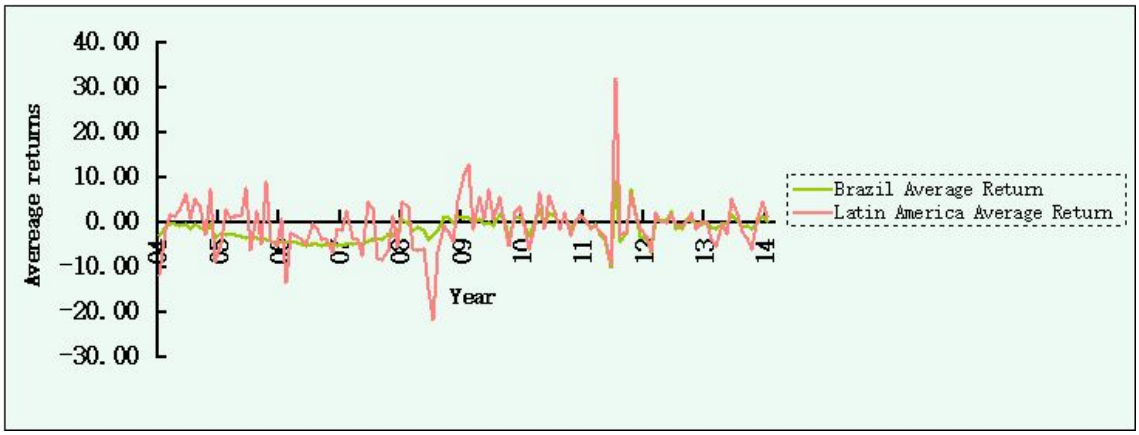
2004-2014	EM model				EM model without RAFI index			
Portfolios	Focus		Diversified		Focus		Diversified	
	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat
Jensen's Alpha	-0.798**	-3.074	-1.063**	-2.870	-0.796**	-3.073	-1.049**	-2.816
MSCHINA	0.102**	3.374	-0.007	-0.359	0.110**	4.669	0.022	1.410
MSBRAZIL	0.006	0.212	0.028	1.595	0.012	0.483	0.046*	2.611
MSRUSSIA	0.075**	2.725	0.055**	2.804	0.082***	3.764	0.076***	4.526
MSINDIA	0.087***	3.642	0.030*	1.788	0.093***	3.981	0.049**	3.194
MSEMLA	0.031	0.913	-0.004	-0.162	0.032	1.120	0.041	1.735
MSEMEA	0.031	1.026	0.034	1.418	0.030	0.885	-0.006	-0.255
MSASIA	-0.070*	-1.936	-0.033	-1.319	-0.072*	-2.040	-0.041	-1.643
RAFI	0.033	0.543	0.110**	2.941	-	-	-	-
BOND	0.209*	2.620	0.139**	3.060	0.215	2.737	0.164**	3.494
BAA	-0.031	-0.702	-0.037	-1.219	-0.030	-0.658	-0.032	-0.982
AR(1)	0.444***	3.701	0.714***	8.955	0.448***	3.763	0.711***	8.835
R-squared	0.842		0.849		0.842		0.843	
Adjusted R-squared	0.826		0.834		0.828		0.828	
Akaike info criterion	3.577		3.155		3.563		3.180	
Schwarz criterion	3.856		3.434		3.818		3.435	
Durbin-Watson stat	2.277		2.560		2.276		2.473	
F-statistic	52.460		55.182		58.100		58.318	
Prob(F-statistic)	0.000		0.000		0.000		0.000	

***.** and * denote statistically significant at 0.1%, 1% and 5% respectively.

6.1.4 Fund performance by country

In order to investigate whether mutual fund who has specific country focus is able to over perform its underlying equities, regressions are made country by country in this section. Again, the EM model with country and region indices as variables is used, and Table 7 shows the result. As we can see, none of the countries yield positive access returns. Latin America mutual funds has the smallest negative alpha(-0.126%), it might indicate that fund managers in this area performs the best comparing to fund managers in other emerging regions during the study period. Admittedly, the alpha is insignificant. However, one may find out that the worst return is from Brazil (alpha = -1.329%, significant at 0.1% level), and it is one of the biggest and dynamic Latin American country. Thus, a graph of the two regions returns is made, aiming at comparing their magnitudes and patterns throughout the years. As shown in the Graph 1, Latin American's mutual funds returns are generally higher than Brazil's, especially before the 2008 financial crisis, and the return pattern is more volatile. Surprisingly, Brazil's average return is mostly negative though out the whole sample period, hence as the consequence its abnormal return is negative.

Graph 1 Brazil and Latin America mutual funds average returns in 2004-2014



One may argue that Brazil is one of the significant emerging country in Latin America,

and if taking a closer analyze of the component of the funds in the study, one may notice that most of the mutual funds in the Latin America portfolio are mainly investing in Brazil equity market, therefore how could the two portfolios behave widely divergent? This conflict result may due to the fact that most of the mutual funds including in the Brazil portfolio are dead funds (18 deads, 3 actives), so they pull down the performance of the portfolio to some extent, and funds including in the Latin America portfolio are mainly active funds (20 deads, 43 actives).

Table 8 Mutual funds performance of different countries during 2004-2014

2004-2014	China		Brazil		Russia		India		Latin America		EMEA	
	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat
Jensen's Alpha	-0.160	-0.608	-1.329***	-3.509	-0.986**	-2.325	-0.863**	-3.337	-0.126	-0.371	-1.001**	-3.138
MSCHINA	0.429***	9.731	0.001	0.033	-0.003	-0.110	0.058*	2.305	0.032	0.416	-0.049	-1.398
MSBRAZIL	-0.129**	-2.635	0.084*	2.112	0.020	0.910	-0.040*	-2.052	0.458***	6.419	-0.042	-1.121
MSRUSSIA	0.024	0.435	0.045	1.165	0.158***	9.461	0.072***	3.645	0.030	0.500	0.078*	2.397
MSINDIA	0.051	1.043	0.031	0.832	-0.012	-0.754	0.345***	18.461	-0.024	-0.673	0.059*	1.664
MSLA	0.017	0.318	0.083*	1.932	-0.030	-1.458	-0.010	-0.425	0.027	0.665	0.071*	1.792
MSEMEA	0.014	0.220	0.052	1.098	0.063*	2.612	0.042	1.591	0.000	0.005	-0.026	-0.592
MSASIA	-0.030	-0.578	-0.153**	-2.978	-0.031	-1.363	-0.023	-0.889	-0.001	-0.014	-0.062	-1.533
RAFI	0.195*	1.863	-0.044	-0.515	0.004	0.098	-0.109*	-1.981	0.036	0.222	0.103	1.130
BOND	0.280*	2.599	0.123	1.079	-0.002	-0.036	0.157***	4.017	0.252**	2.996	0.311***	6.558
BAA	0.030	0.486	-0.080	-1.207	0.059	1.529	-0.021	-0.759	-0.018	-0.360	-0.003	-0.068
AR(1)	-0.066	-0.604	0.515***	3.457	0.763***	10.367	0.617***	7.877	0.192	1.475	0.441***	3.374
R-squared	0.850		0.533		0.805		0.930		0.828		0.723	
Adjusted R-squared	0.835		0.486		0.786		0.923		0.811		0.695	
Akaike info criterion	4.392		4.194		3.193		3.061		4.772		3.991	
Schwarz criterion	4.670		4.472		3.472		3.340		5.051		4.269	
Durbin-Watson stat	1.985		2.307		2.532		2.354		2.018		2.269	
F-statistic	55.561		11.214		40.658		130.224		47.329		25.624	
Prob(F-statistic)	0.000		0.000		0.000		0.000		0.000		0.000	

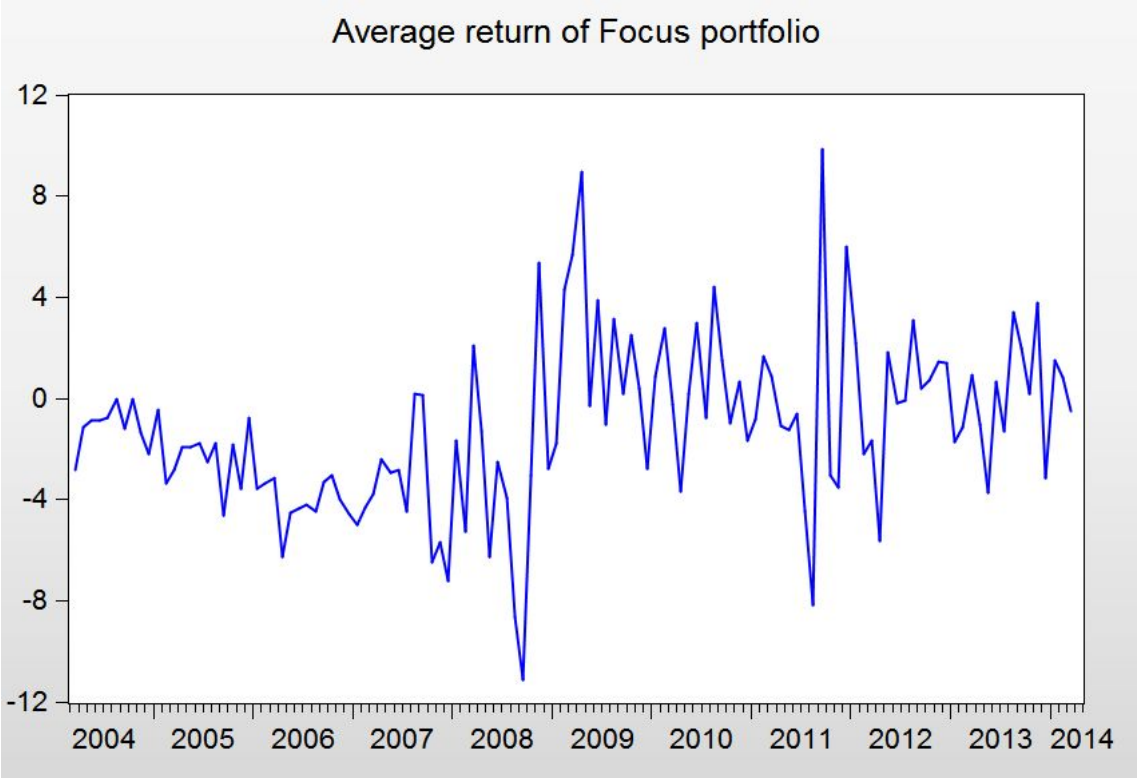
***.** and * denote statistically significant at 0.1%, 1% and 5% respectively.

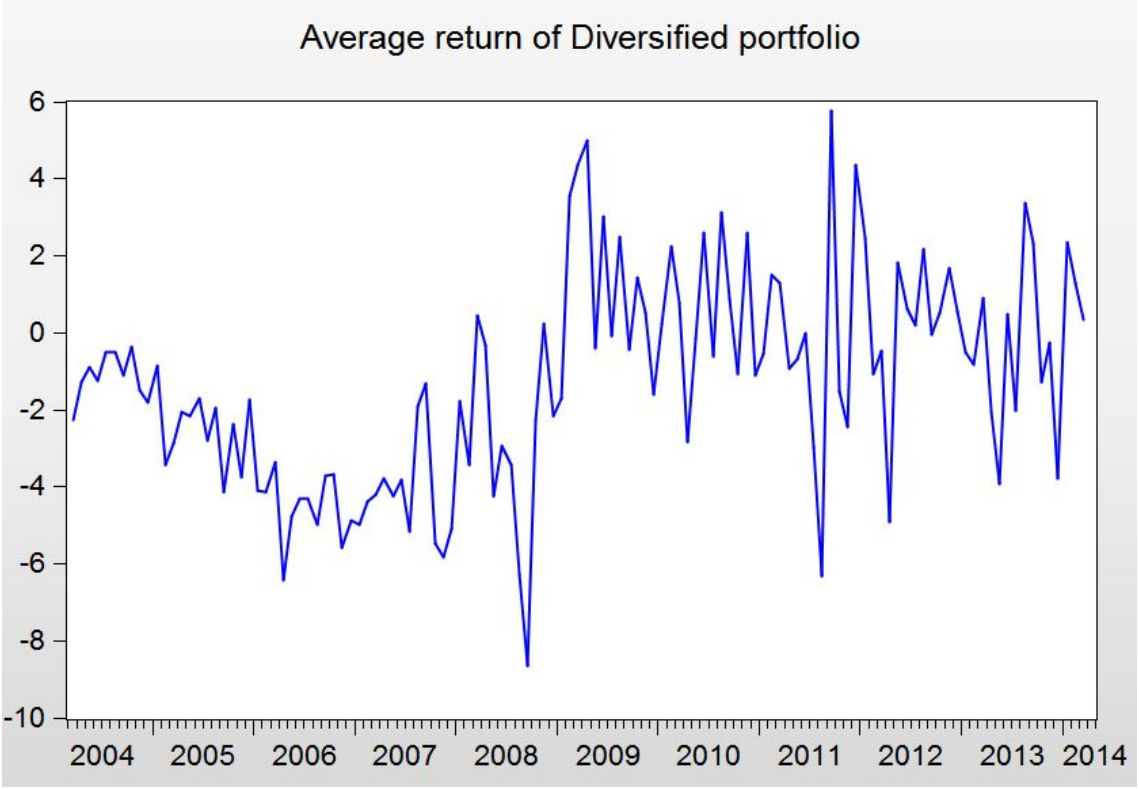
6.2 Performance measurement results of sub-periods

Table 8 shows the regression results of EM model in different sub-periods. It is surprisingly to see that mutual funds perform better during crisis period than pre-crisis period, although the abnormal returns are still negative. The alpha of the "Focus portfolio" is -4.100% in the period 2004-2006, and it increased to -1.592% during the crisis period. So does the alpha of the "Diversified portfolio", it increased from -4.226% to -2.250% as the time goes by. Moreover, when taking a look at the after crisis period, the abnormal return of the "Diversified portfolio" becomes positive, and the alpha of the "Focus Portfolio" is also near to zero. However, both results are insignificant.

One may notice that funds perform poorly before the global financial crisis, and if taking a closer look at the data by making a graph, it is easy to see that the average return of both the Focus and the Diversified portfolios are below 0 in most of the time before the global crisis. The reason behind the poor performance might due to the reason that for Brazil, India, Russia and EMEA, most of the funds in the pre-crisis period from 2004 to 2006 are dead funds, and they either perform badly or terminate generating any returns during the time. Hence these funds somehow drive down the performance of the whole portfolio during the period. The other reason behind the scene is that the risk free interest rate is high before the global crisis (in average 4%), therefore the mutual fund return relative to the risk free rate is low.

Graph 2 Average return of the portfolios (relative to the risk free rate)





However, in Basu and Huang-Jones (2015)' paper, they take 2008 to 2010 as crisis period and find that the diversified emerging market funds perform worse than the pre-crisis period during the crisis. But when they look at the performance of different fund quartiles, the funds in the top quartile have higher alpha during the crisis period relative to that for full sample period. They conclude that top performers seem to have adjusted their portfolio risk by reallocate into safer assets like cash during crisis period. In contrary, Eling and Faust (2010) find in their study that emerging market mutual funds without geographical focus perform worse before the 2008 financial crisis (from 2000 to 2006) than during the crisis period (2007-2008), where the abnormal return is -0.3%, and it rises to -0.04% during the crisis period.

Now one can conclude that the mutual funds of emerging markets do not outperform their market benchmarks through out the whole sample period. Especially during the pre-crisis years from 2004 to 2006, both mutual fund portfolios with and without geographical focuses yield negative abnormal returns comparing to the markets. When markets going down during the financial crisis period, the performance of the mutual funds is getting better relatively, nevertheless the abnormal returns keep negative. Finally, during the recovering period, the abnormal return become positive, which might indicate that the mutual funds perform better than the underlying emerging market equities, however the result is insignificant. Therefor all the null hypothesize are rejected and one may conclude that the emerging market mutual funds under perform their corresponding market benchmarks in financial booming period, crisis period and recovering period.

The result is inline with most of the previous literature. As long as the emerging markets are becoming more and more efficient, it is getting harder and harder for fund managers to beat the market and obtain access returns. In addition, because investing in emergingmarkets is offshore investment, hence the information disadvantage might

cause more difficulties on selecting underlying assets and reacting to news relating to the assets.

Table 9 Mutual funds performance in sub-periods

	2004-2006 Before crisis				2007-2008 During crisis				2009-2014 After crisis			
Portfolios	**Focus**		**Diversified**		**Focus**		**Diversified**		**Focus**		**Diversified**	
	Coef	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**
Jensen's Alpha	-4.100*	-1.734	-4.226*	-1.819	-1.592**	-4.272	-2.250*	-2.951	-0.015	-0.117	0.016	0.174
MSCHINA	0.060**	3.460	-0.006	-0.288	0.140*	2.102	-0.022	-0.524	0.201***	4.252	0.037	1.053
MSBRAZIL	0.051***	4.934	0.031*	2.496	0.010	0.136	0.065	1.767	0.074*	1.248	0.064*	1.804
MSRUSSIA	0.017	0.999	0.012	0.644	-0.040	-1.067	-0.033	-1.111	0.104*	2.255	0.031	0.990
MSINDIA	0.016	0.762	-0.013	-0.639	-0.059	-1.640	-0.030	-0.889	0.097**	2.887	0.023	0.874
MSEMLA	-0.014	-0.471	-0.021	-0.492	-0.022	-0.216	-0.011	-0.237	0.025	0.697	0.019	0.690
MSEMEA	-0.023	-1.209	-0.024	-1.233	0.086	0.905	0.063*	1.875	0.012	0.314	-0.008	-0.345
MSASIA	0.040	1.285	0.058	1.410	0.017	0.159	-0.020	-0.465	-0.050	-1.243	-0.021	-0.654
RAFI	0.025	0.569	0.120*	2.645	0.201	1.265	0.191*	2.777	-0.104	-1.051	0.112	1.316
BOND	-0.056*	-2.123	-0.064*	-2.422	0.306***	3.824	0.101*	2.219	0.055	0.709	0.174*	2.082
BAA	-0.034	-1.077	-0.074*	-1.777	0.083	0.982	-0.019	-0.649	-0.057	-0.935	0.004	0.128
ar(1)	0.937***	13.597	0.919***	9.932	-0.582	-1.732	0.794***	5.440	-0.091	-0.644	-0.074	-0.391
R-squared	0.955		0.930		0.935		0.930		0.913		0.918	
Adjusted R-squared	0.932		0.893		0.870		0.861		0.894		0.900	
Akaike info criterion	1.344		1.633		3.629		2.736		3.034		2.407	
Schwarz criterion	1.888		1.854		4.221		3.329		3.445		2.818	
Durbin-Watson stat	2.539		2.401		1.994		1.919		1.995		1.979	
F-statistic	40.641		25.402		14.333		13.346		47.931		50.931	
Prob(F-statistic)	0.000		0.000		0.000		0.000		0.000		0.000	

***.** and * denote statistically significant at 0.1%, 1% and 5% respectively.

6.3 High rating funds performance v.s. low rating funds performance

Morningstar rating methodology gives a comprehensive analyze of funds based on their past performance, and it offers an idea that higher ratings funds are more outstanding than other funds to some extent. In this section, the data is sorted by this rating system, and then whether higher rating funds are able to yield better return than lower rating ones from a long-term investment perspective is tested.

6.3.1 1to 5 star portfolios

Morningstar provides a fund data screening function on their website which allow investors to select funds based on various criteria such as fund categories, ratings and risks. First, the screening function mentioned above is used to select funds with 1 to 5 star ratings from the Mornignstar database, which are under the categories of “Diversified Emerging Market” and “Emerging markets bond”. Next, the corresponding funds from the data set of this paper are found and are assorted into “Diversified: 1 to 5 star” portfolios accordingly. However, because the fund names using in the data set are abbreviation, there is the problem with data matching, which might leads to some data omission. In sum, the numbers in Diversified funds with stars are: 27 funds in 1 star portfolio, 111 funds in 2 star, 155 funds in 3 star, 63 funds in 4 star and 36 funds in 5 star.

For the Focus group, due to the fact that there is only three emerging country/region sub-categories in the Morningstar Category (“India Equity”, “China Region” and “Latin America Stock”), it is not able to create the star portfolios corresponding to our “Focus” portfolio which contains six emerging market countries/regions.

6.3.2 Star changes problem

The overall rating of fund which is calculated using the weight of fund age is used in the study. According to Morningstar, funds are rated up to three periods-the trailing three-, five-, and ten years. For fund does not change categories during the evaluation period, and the fund age is at least 3 years but less than 5, the overall rating is calculated as 100% basing on its three-year rating; for fund age which is at least 5 years but less than 10, the overall rating is calculated as 60% basing on its five-year rating and 40% basing on its three-year rating; and for fund age which is is at least 10 years, the overall rating is calculated as 50% basing on its ten-year rating, 30% basing on its five-year rating and 20% basing on its three year-rating.[6]

Guercio and Tkac (2008) investigate the frequency of star rating changes, and they summarized that the major changes are upgrades or downgrades for one star, and the changes greater than one star is only count for 1% of all rating changes. Moreover, because one is interested in the funds performance throughout the whole sample period, and in order to avoid the influence of star changing on the result, the history ratings of each fund that is chosen into the star portfolios is evaluated, and only funds whose ratings do not change or only change one star during the whole study period are accepted. In other words, only funds with stable star rating throughout the entire study period into the 1-5 star portfolios are included in the portfolios.

6.3.3 Descriptive statistics

The descriptive statistics of the diversified star portfolios is shown in Table 9. It is surprisingly to see that 1 star portfolio has higher mean return (0.591%) than 5 star, 3 star and 2 star portfolios. This result might be due to the fact that most of the funds in 1 star portfolio are newly created since 2009 (23 new funds out of 27), hence they do not

[6] See Morningstar website: Rating Methodology:The Morningstar Rating™ for funds. <http://corporate.morningstar.com/US/documents/MethodologyDocuments/FactSheets/MorningstarRatingForFunds_FactSheet.pdf>

contain any data during and before the financial crisis period, and their average return might be higher than other portfolios which have been through the crisis period respectively. 4 star portfolio has the highest average return, and it is inline with Blake and Morey (2000)'s study that highest ratings do not outperform the next to highest. If comparing the star portfolios with the diversified portfolio, one may find that all the star portfolios yield better average return than the total diversified portfolio (0.133%) which including both stared and non-stared funds.

Table 10 Descriptive statistics of the star rating portfolios

Portfolios	1 star	2 star	3 star	4 star	5 star	Diversified (total)
Mean	0.591	0.304	0.419	0.596	0.465	0.133
Median	0.982	0.533	0.562	0.877	1.090	0.273
Maximum	18.037	15.617	15.010	14.050	13.808	5.768
Minimum	-31.761	-22.649	-24.765	-24.931	-25.215	-7.790
Std. Dev.	7.117	5.763	5.655	5.604	5.446	2.058
Skewness	-0.950	-0.470	-0.753	-0.873	-1.008	-0.543
Kurtosis	5.986	4.683	5.792	5.979	6.475	5.094
Jarque-Bera	63.158	18.728	50.747	60.123	81.385	28.039
Probability	0.000	0.000	0.000	0.000	0.000	0.000
Sum	71.472	36.781	50.759	72.092	56.231	16.063
Sum Sq. Dev.	6078.223	3985.837	3837.888	3767.909	3559.112	508.154
Observations	121	121	121	121	121	121

6.3.4 Regression results

Table 10 reports the regression result of the star portfolios. Non of the portfolio generate positive return, and as expected, 5 star portfolio gains the highest abnormal return (-0.118%). Moreover, except for the 1 star portfolio, the abnormal returns of the 2 to 5 star portfolios are in order basing on the star rankings, where the 2 star portfolio yields the lowest return (-0.542%) and is statistically significant at 5% level; the alpha of the 3

star portfolio is a little bit higher (-0.362%) and statistically significant at 10% level. Admittedly, the abnormal returns of 1 star, 4 star and 5 star portfolio are not statistically significant. In addition, Table 6 reports that the alpha of the Diversified portfolio is -1.063%, hence, comparing with the alphas of the star portfolio, one can conclude that star funds perform better than non-star funds in general.

Table 11 Diversified star portfolios performance from 2004 to 2014

2004-2014	1 star		2 star		3 star		4 star		5 star	
Diversified	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**
Jensen's Alpha	-0.201	-1.050	-0.542**	-2.920	-0.362*	-1.759	-0.195	-1.228	-0.118	-0.519
MSCHINA	0.019	0.405	0.020	0.398	0.031	0.741	0.041	1.211	0.070	1.143
MSBRAZIL	0.093*	2.234	0.043	0.906	0.049	1.181	0.048*	1.675	0.102*	1.763
MSRUSSIA	0.070*	1.671	0.056	1.334	0.074*	2.134	0.035	1.236	0.036	0.748
MSINDIA	0.046	1.206	0.003	0.068	0.028	0.839	0.052*	1.875	0.052	1.108
MSEMLA	0.051	1.245	0.082	1.615	0.083*	2.057	0.083*	2.373	0.070	1.163
MSEMEA	-0.021	-0.482	-0.062	-1.130	-0.084	-1.940	-0.076	-1.853	-0.150*	-1.903
MSASIA	-0.032	-0.719	-0.005	-0.090	0.015	0.320	-0.010	-0.245	0.121	1.600
RAFI	0.635***	5.216	0.595***	5.262	0.482***	5.158	0.497***	6.701	0.299*	2.552
BOND	0.211**	2.789	0.194**	2.698	0.261***	3.773	0.279***	5.665	0.445***	4.819
BAA	-0.007	-0.119	-0.010	-0.193	-0.026	-0.576	-0.014	-0.362	0.059	0.746
ar(1)	0.072	0.627	-0.006	-0.074	0.118	1.044	0.119	1.170	0.076	0.873
R-squared	0.945		0.903		0.925		0.952		0.854	
Adjusted R-squared	0.939		0.893		0.917		0.947		0.839	
Akaike info criterion	4.034		4.265		3.975		3.501		4.599	
Schwarz criterion	4.313		4.544		4.254		3.779		4.878	
Durbin-Watson stat	1.992		1.995		2.014		2.021		2.019	
F-statistic	168.723		91.565		120.337		193.040		57.204	
Prob(F-statistic)	0.000		0.000		0.000		0.000		0.000	

***.** and * denote statistically significant at 0.1%, 1% and 5% respectively.

As mentioned earlier, funds including in the 1 star portfolio are most newly created funds after the financial crisis, therefore regression of the whole sample period of this portfolio may not provide good reference to the study. Hence it is necessary to make another regression of the star portfolios during the post-crisis period from 2009 to 2014, in order to see that with well-matched data, whether higher star portfolios are able to outperform lower star ones.

As shown in Table 11, high star portfolios perform better than low star ones in average, especially for the 5 star portfolio, which generates a positive and statistically significant alpha (0.629%). This time, 1 star portfolio underperforms most of other portfolios as well as its underlying stocks, but the negative alpha is not statistically significant. This regression result indicate that after the financial crisis, funds with higher Morningstar ratings are able to outperform the lower rating funds as well as the market benchmarks. In addition, Comparing with the whole diversified portfolio which yield an access return of 0.017% in the period of 2009 to 2014, 3 star, 4 star and 5 star funds are more outstanding than average, however, the alpha of 3 star and 4 star portfolios are not statistically significant.

Basu and Huang-Jones (2015) sort funds into different quartiles according to the alpha of individual funds, and test the difference between the highest quartile group and lowest quartile group. They find that the spread in alphas is statistically significant. Similarly, differences of alphas between star portfolios are tested in the paper. Table 12 illustrate the result that the spread in alphas between high star portfolio and low star portfolio are highly statistically significant.

Table 12 Diversified star portfolios performance from 2009 to 2014

2009-2014	1 star		2 star		3 star		4 star		5 star	
Diversified	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**	**Coef**	**t-Stat**
Jensen's Alpha	-0.033	-0.178	-0.065	-0.417	0.129	0.705	0.138	0.770	0.629**	2.736
MSCHINA	0.140*	2.264	0.080*	1.712	0.104*	2.091	0.088*	1.792	0.104*	1.874
MSBRAZIL	0.085	1.417	0.059	1.066	0.036	0.811	0.016	0.333	0.063	1.243
MSRUSSIA	0.079	1.426	0.066	1.420	0.076	1.570	0.056	1.216	0.038	0.704
MSINDIA	0.086*	2.094	0.075*	2.441	0.073*	2.590	0.092**	3.042	0.110**	3.308
MSEMLA	0.094	1.580	0.109*	2.681	0.098*	2.317	0.122**	2.821	0.070	1.361
MSEMEA	-0.087	-1.293	-0.082*	-2.059	-0.105*	-2.639	-0.113*	-2.572	-0.120**	-2.221
MSASIA	-0.015	-0.233	-0.041	-0.901	-0.018	-0.411	-0.036	-0.770	0.026	0.557
RAFI	0.432**	3.100	0.392***	4.136	0.362***	4.511	0.348***	4.301	0.151*	1.694
BOND	0.294*	1.921	0.354**	3.233	0.386***	3.771	0.459***	4.229	0.522***	4.190
BAA	0.048	0.708	-0.027	-0.575	-0.005	-0.116	0.003	0.071	0.033	0.518
ar(1)	-0.221	-1.305	-0.105	-0.661	0.030	0.189	-0.042	-0.259	0.203	1.340
R-squared	0.959		0.967		0.964		0.958		0.932	
Adjusted R-squared	0.950		0.960		0.956		0.949		0.918	
Akaike info criterion	3.693		3.188		3.221		3.292		3.436	
Schwarz criterion	4.105		3.600		3.632		3.703		3.848	
Durbin-Watson stat	1.988		1.974		1.988		2.005		1.972	
F-statistic	105.502		134.551		121.013		103.708		62.698	
Prob(F-statistic)	0.000		0.000		0.000		0.000		0.000	

***.** and * denote statistically significant at 0.1%, 1% and 5% respectively.

So far one can conclude that in general the diversified emerging market funds with higher Morningstar rating perform better than the funds with lower rating during the whole sample period, and also during the market recovering period. Moreover, star funds yield better average return than the whole diversified portfolio which including both star and non-star funds. Hence, one may say that within the diversified emerging market category, if investors refer Morningstar's rating and allocate their money into the high rating funds, they have the chance to gain better return than investing in low rating and non- star funds.

Table 13 Difference between high star portfolio and low star portfolio

Difference	Jensen's Alpha	T-stat	Prob.
5s-4s	0.456***	4.800	0.000
5s-3s	0.470***	5.587	0.000
5s-2s	0.659***	6.321	0.000
5s-1s	0.613***	4.528	0.000

7 CONCLUSION AND DRAWBACKS

The study result is consistent with most of the previous study results, that is the US-based mutual funds investing in emerging markets are not able to outperform the related market benchmarks. The developed market index S&P 500, the multi-country index BRIC and MSCI Emerging Market (EM), and the country/region index such as the MSCI China and the MSCI Latin America are taken into the EM regression model separately, and the regression results indicate that emerging market mutual funds are not able to yield positive Jensen's alpha (access return) during the whole sample period from 2004 to 2014, regardless the type of the indices applying in the model. When making further investigation by making regression in different time windows, one may notice that funds perform better during the global financial crisis period (2007-2008) comparing to the whole sample period, although the alphas are still negative. There is a trend that these funds begin to yield positive abnormal returns after the crisis period (2009-2014), however the regression result is insignificant. It may be explained that as long as the emerging markets are becoming more and more efficient, it is getting harder and harder for fund managers to beat the market and obtain access returns. In addition, one may notice that country/region specific market indices capture the emerging market fund characteristics the best, model applying these indices generates higher R-squared comparing to the model using multi-country indices.

Kotkatvuori-Örnberg et al (2011) provide evidence that emerging market hedge funds with geographical focus behave better than funds without focuses, they assume that market focus likewise to information advantage, and information advantage leads to better performance, especially for emerging markets. Extending their study, in this paper there is evidence showing that emerging market mutual funds with geographical focus also can outperform diversified emerging market mutual funds, which might again

prove the idea that geographical focus leads to information advantage and helps fund managers make better analyzing of the funds and obtain better return eventually.

Another important finding of the paper is that diversified emerging market mutual funds with higher Morningstar rating perform better than lower rating funds who is in the same Morningstar category. Furthermore, the highest rating portfolio (5 star portfolio) generate positive and statistically significant abnormal return after the global financial crisis. This result might shed light on the selection of emerging market mutual funds for investors.

There are some drawbacks of the paper need to be mentioned. First, the indices using in the regression model can be improved. The R-squared is around 0.8 for the regression of whole sample period, and for sub-periods, the R-squared is around 0.9. The selection of the indices in this paper is based on previous studies, if possible, one can use stepwise regression technique to find out the most relevant control variables for emerging market funds. For example, many of the previous papers using S&P/IFCI index as the control variable, which might be suitable for our study as well. In addition, there is an unsolved question in this paper, that is why multi-country indices (the MSCI BRIC index and the MSCI Emerging market index) have low correlation with the emerging market mutual funds, and as the consequence, the regression model using multi-country indices has lower explaining power than the model using single country/region indices.

Second, when analyzing diversified emerging market funds performance under the Morningstar rating methodology, there is a problem concerning fund sorting. Because different databases use different abbreviate fund name, it is not able to match the data set using in the paper with the Morningstar emerging market fund data precisely. As the consequences, some of the funds with stars are not found in our data set, and it might

influence the accuracy of the study result. In addition, the performance of funds with geographical focus as well as star ratings should be investigated in further.

Third, a comparison of performance between emerging market mutual funds and developed market mutual funds (or global market mutual funds) can be done in future studies. Although one do not observe positive excess returns of emerging market mutual funds comparing to the emerging market indices, they might still perform better than developed market mutual funds. The comparison between fund performance in the two markets will shed light on fund selection to investors.

PRELIMINARY REFERENCES

Ackermann, C., McEnally, R., Ravenscraft, D (1999). The performance of hedge funds: risk, return, and incentives. *Journal of Finance* 54, 833– 874.

Arnott, Hsu., Moore (2005). Fundamental indexation. Financial analysts Journal. 61 (2), 83-99.

Barry, C., Peavy, J., Rodriguez, M (1998). Performance characteristics of emerging capital markets. *Financial Analysts Journal*. 72–80 Jan-Feb.

Basu, Anup K., Huang-Jones, Jason (2015). The Performance of Diversified Emerging Market Equity Funds. *Journal of International Financial Markets, Institutions and Money.* 35, 116-131.

Bekaert, Geert (1995). Market integration and investment barriers in emerging equity markets. *World Bank Economic Review*. 9, 75 ‑ 107.

Bekaert, Geert., S. Urias, Michael (1996). Diversification, integration and emerging market closed-end funds. *The Journal of Finance*. Vol. LI, NO. 3, JULY 1996.

Bekaert, Geert., Harvey, Campbell R (2002). Research in emerging markets finance: looking to the future. *Emerging Markets Review*. 3, 429 ‑ 448.

Blake, Christopher R., Morey, Matthew R (2000). Morningstar ratings and mutual fund performance. *Journal of Financial and Quantitative Analysis.* 35, 451–483.

Blitz, David., Huij, Joop (2012). Evaluating the performance of global emerging markets equity exchange-traded funds. *Emerging Markets Review* 13, 149 – 158.

Borenztein, E.R., Gelos, R.G (2003) Leaders and followers: emerging market fun behavior during tranquil and turbulent times. *Emerging Market Review* 4(1), 25-38.

Buchanan, Bonnie., English II.Philip C., Gordon, Rachel (2011). Emerging market benefits, investability and the rule of law. *Emerging Markets Review* 12, 47–60

Carhart, Mark M (1997). On persistence in mutual fund performance. *The Journal of Finance* Vol. LII, NO.1, 57 – 82.

Chambet, Anthony., Gibson, Rajna (2008).Financial integration, economic instability and trade structure in emerging markets. *Journal of International Money and Finance* 27,654–675.

Cohen, Benjamin H., Remolona, Eli M (2008). Information flows during the Asian crisis: Evidence from closed-end funds. *Journal of International Money and Finance* 27, 636-653.

De Santis., Imrohoroglu (1997). Stock returns and volatility in emerging financial markets. *Journal of International Money and Finance.* 16, 561-579.

Eling, Martin., Faust, Roger (2010). The performance of hedge funds and mutual funds in emerging markets. *Journal of Banking & Finance* 34, 1993 – 2009.

Elton, Edwin J., Gruber, Martin J., Blake, Christopher R (1996). Survivorship bias and mutual fund performance. *Review of Financial Studies Volume* 9 (4),

1097-1120.

Fung, William., Hsieh, David A(1997). Empirical characteristics of dynamic trading strategies: The case of hedge funds. *Review of Financial Studies* 10 (2), 275 – 302.

Huang, J-Z., Wang, Y (2013). Should investors invest in hedge fund-like mutual funds? Evidence from the 2007 financial crisis. *J. Financial. Intermediation,* working paper.

Huang, Mingyi (2001). Information and Trading Risks in Global Investing: An Empirical Analysis of Research Location and Pacific Rim Mutual Fund Performance. *Journal of International Financial Management and Accounting,* 12:1.

Huij.Joop., Verbee, Marno (2007).Cross-sectional learning and short-run persistence in mutual fund performance. *Journal of Banking & Finance* 31, 973 – 997.

Huij, Joop., Post, Thierry (2011). On the performance of emerging market equity mutual funds. *Emerging Markets Review* 12, 238 – 249.

IMF (2009). World economic and financial survey: world economic outlook-crisis and recovery. *IMF. [online]. [Cited 20.7.2014].* Available form internet:
< URL: http://www.imf.org/external/pubs/ft/weo/2009/01/pdf/text.pdf >

Jensen, Mechael C (1967). The performance of mutual funds in the period of 1945-1964. *Journal of Finance*, Vol. 23, No. 2 (1967) 389-416

Joseph F. Hair Jr, William C. Black, Barry J. Babin, Rolph E. Anderson (2010). *Multivariate Data Analysis*.

Kacperczyk, M., Sialm, C., Zheng, L (2005). On the industry concentration of actively managed equity mutual funds. *Journal of Finance* 60 (4), 1983-2011.

Kaminsky, Graciela., Lyons, Richard., Schmukler, Sergio (2001). Mutual Fund Investment in Emerging Markets: An Overview. *The World Bank Documents & Reports*.

Liang, B., (1999). On the performance of hedge funds. *Financial Analysts Journal* 72–85.

Michelon, Stuart., Philipova, Elena., Srotova, Petra (2008). The Case For Emerging Market Funds. *Journal of Business & Economics Research* November, 2008 ,Volume 6, No.11.

Morningstar. About Us. *Morningstar. [online]. [Cited 23.10.2014].* Available form internet:<URL: http://corporate.morningstar.com/US/asp/subject.aspx?xmlfile=177. xml>

Morningstar. Rating Methodology:The Morningstar RatingTM for funds. *Morningstar. [online]. [Cited 23.10.2014].* Available form internet: <URL:http://corporate.morningstar.com/US/documents/MethodologyDocuments/FactSheets/MorningstarRatingForFunds_FactSheet.pdf>

Neter, J., W. Wasserman, and M. H. Kutner. (1990). *Applied linear statistical models*.

Peltomäki, Jarkko (2008). Emerging market hedge funds and the yen carry trade. *Emerging Markets Review* 9, 220 – 229.

Polwitoon, Sirapat., Tawatnuntachai, Oranee (2008). Emerging Market Bond Funds: A Comprehensive Analysis. *The Financial Review* 43, 51-48.

Rinne, Eemeli., Vähämaa, Sami(2011). The 'Dogs of the Dow' strategy revisited: Finnish evidence. *The European Journal of Finance* Vol. 17, Nos. 5–6, 451–469.

Serra, Anna Paula (2000). Country and industry factors in returns: evidence from emerging markets' stocks. *Emerging Markets Review* 1, 127-151.

Tabachnick, Barbara G., and Linda S. Fidell. 2007. *Using multivariate statistics*.

Teo, M (2009). The geography of hedge funds. *Review of Financial Studies.* 22 (9), 3531-3561.

Örnberg, Juha K., Nikkinen, Jussi., Peltomäki, Jarkko (2011). Geographical focus in emerging markets and hedge fund. *Emerging Markets Review* 12, 309–320.