TALLINN UNIVERSITY OF TECHNOLOGY
School of Business and Governance
Department of Economics and Finance

Petteri Kotro

COMPARISON ANALYSIS BETWEEN ACTIVELY MANAGED FUNDS AND EXCHANGE TRADED FUNDS

Bachelor's thesis

Supervisor: Associate Professor Tatjana Põlajeva

Tallinn 2017

I declare I have written the bachelor's thesis independently.

All works and major viewpoints of the other authors, data from other sources of literature and elsewhere used for writing this paper have been referenced.

Petteri Kotro

(Signature, Date)

Student's code: 130326
Student's Email address: petteri.kotro@gmail.com

Supervisor Associate Professor Tatjana Põlajeva
The Thesis conforms to the requirements set for the bachelor's theses

(Signature, Date)

Chairman of defense committee:
Permitted to defence

(Title, Name, Signature, Date)

TABLE OF CONTENTS

ABSTRACT

This Bachelor's thesis examines the differences between actively managed funds and exchange traded funds. The research studies performances of actively managed European equity funds and European exchange traded funds from the beginning of 2012 to the end of 2016. The goal of the research is to solve which investing strategy has been more successful during the examined time period, active or passive managing.

Nine actively managed funds and exchange traded funds are examined in this research. Each actively managed fund and exchange traded fund is formed into a pair. This fund pair shares the same market equity and benchmark index. Research examines their performance before and after the fund managing costs. Furthermore, research examines their risk-adjusted performance and volatility.

Results show that majority of actively managed funds have had better annualised return than exchange traded funds. However, exchange traded funds have had better annualised return after managing costs. In addition, exchange traded funds have had better risk-adjusted return and they have been more stable in the terms of volatility.

Keywords: Investing, Mutual funds, Exchange traded funds, Fund managing, Comparison analysis

INTRODUCTION

Nowadays, a private investor has wide range of financial instruments available to satisfy his/hers needs to invest, such as stocks, bonds or funds. Choosing a right financial instrument for you can be time consuming. This tends investors to invest their money into investment funds which are managed by a professional fund manager, also known as treasurer.

One of the most popular financial instruments have been mutual funds. Actively managed mutual funds have been the most popular form of funds. It is easier to create a good diversification within a portfolio by buying share of mutual fund than purchasing variety of single stocks. This is why both actively managed mutual funds and exchange traded funds (ETF) are great way to get into the world of investing.

In the past decade, ETFs have been getting more popular amongst private investors. One of the biggest reason for the growth of ETFs has been the poor performance of actively managed mutual funds recent years. Both actively managed mutual funds and ETFs have their advantages and disadvantages. Maybe the biggest difference between these are the way the portfolios are managed and their costs. Actively managed mutual funds tend to have higher costs than ETFs because they are managed more actively than ETFs and lot of transactions is done. Also, their primary goal is to beat the underlying index. ETF's goal is not to beat the index but to follow the underlying index as close as possible.

The research problem in this thesis is to evaluate if ETF is a good financial instrument compared to actively managed fund in Europe. The comparison is done by taking performance after costs and performance of the fund by adjusting for its risk (Sharpe ratio) into consideration. According to Puttonen and Repo, information, amount of the investment, investment horizon and risk bearing capacity & "thirst" to profit are the factors which should be taken into a consideration when financial instrument is being chosen. (Puttonen, V. and Repo, E., 2011, 18)

This thesis will examine and compare nine ETF funds and nine actively managed funds. The study consists historical performance, volatile, costs and Sharpe ratios of the

funds. The chosen time period for this study is from the beginning of 2012 to the end of 2016. All the funds in this research invest in European stock market.

The objective of this research is to provide insight of ETFs and mutual funds. One of the objectives is to offer a better understanding of which actively managed funds have performed better than the index/ETF and which have not. This research also tries to bring up if there is any ETFs which have performed better than actively managed funds when their costs are taken into consideration. The main objective is to find out if a fund with passive investing strategy can perform better than a fund with an active investing strategy.

Lately, there have been news about actively managed funds which have underperformed and been losing to the underlying index. According to the Financial Times article, 99% of actively managed US equity funds underperform. The article also states that several scientific studies shows that actively managed funds have major difficulties performing better than the underlying index in a long term. (Newlands, C. and Marriage, M., Financial Times, 2016, a) Furthermore, according to a Finnish commerce-oriented newspaper, Kauppalehti, actively managed funds have difficulties in Finland as well. (Kyynäräinen, T., Kauppalehti, 2016, a)

The hypothesis of this research will be following: majority of European ETFs that tracks the benchmark index have outperformed the actively managed European equity funds which has the same benchmark index. This is based on Kauppalehti's and Financial Time's financial articles.

This research is done by selecting nine different fund pairs. Each pair is formed from one ETF and one actively managed fund. Each pair invest in the same market and has the same index as a benchmark. Major amount of the mutual funds has been selected from Investment Research Finland's Mutual fund report and the rest have been selected from Morningstar's database.

This is research is a quantitative research. All the data is gathered from Morningstar's website, Investment Research Finland's website and funds' issuers websites.

This thesis will cover the way mutual funds operate and their history. Also, thesis will explain mutual funds' structure, risks and costs. After this, the thesis will go through information about ETFs. This part consists basics of ETFs and their history. In addition, ETF's structure, more specifically, physical ETFs and synthetic ETFs. After this will follow theory about trading of an ETF and its risk and costs. After the theoretical chapter, will follow

the research of this thesis and its methodology. Hereafter, will come the results of the research and conclusion of the whole thesis. At the very end of this thesis, is a list of references in alphabetical order that has been used in this thesis.

1. MUTUAL FUNDS

Mutual fund is portfolio which can consist stocks, bonds and other various securities. The fund is owned by people or companies which have invested their money in it. The fund is divided in to equal sized shares. The profit of the fund is divided between the shares equally. Managing of the fund and transactions in the fund is done by fund management companies. All the shares in the fund is owned by investors and not by the fund management company (Puttonen, V. and Repo, E., 2011, 30)

Mutual funds allow individual investor to start investing their money easily. Mutual fund is great investment instrument to get started in investing. It is rather easy to start investing in mutual funds because the fund manages stocks in the fund. (Pesonen, M., 2015, 116)

1.1 History

It is said that the world's first mutual fund was a fund called Massachusetts investors trust. It was established in 1924 in United States. In the United States, investment companies have existed since 1820's but at that time those weren't called as "funds". (Pesonen, M., 2015, 116-117)

When Finland set an investment fund law, Finland's first mutual fund was born. At the beginning the fund grew rather slowly. However, at middle of 1990's, the mutual fund started to grow its popularity among individual investors. The growth of the mutual fund increased rapidly in 2000's. At the end of 2007, mutual funds in Finland had almost 70 billion euros' worth of capital. However, the capital dropped to 40 billion euros in 2008 when the financial crisis hit Finland's economy. In 2009, Finland's economy started slowly and steadily recover from the financial crisis and total capital ended up being 54.3 billion euros at the end of the

year. At the end of 2013, total capital had grown to 70 billion euros. (Pesonen, M. ,2015, 117; Puttonen, V. and Repo, E. 2011, 29)

In the year 2011, there were 29 fund management companies registered in Finland and 482 domestic mutual funds.

1.2 Structure

Mutual fund is portfolio which can consist stocks, bonds and other various securities. The fund is owned by people or companies which have invested their money in it. The fund is divided in to equal sized shares. The profit of the fund is divided between the shares equally. Managing of the fund and transactions in the fund is done by investment companies. All the shares in the fund is owned by investors and not by the investment company. (Puttonen, V. and Repo, E., 2011, 30)

Mutual funds must follow rules which has been set by Financial Supervisory Authority. Share owners can give their opinion on the policy-making in the investment company through investment company's board of directors. At least third of the board of directors must be chosen by the share owners. The assets of the mutual funds are kept by the custodian. Custodian also supervisions the investment company and makes sure that purchase and selling orders are implemented. (Puttonen, V. and Repo, E., 2011, 30-31)

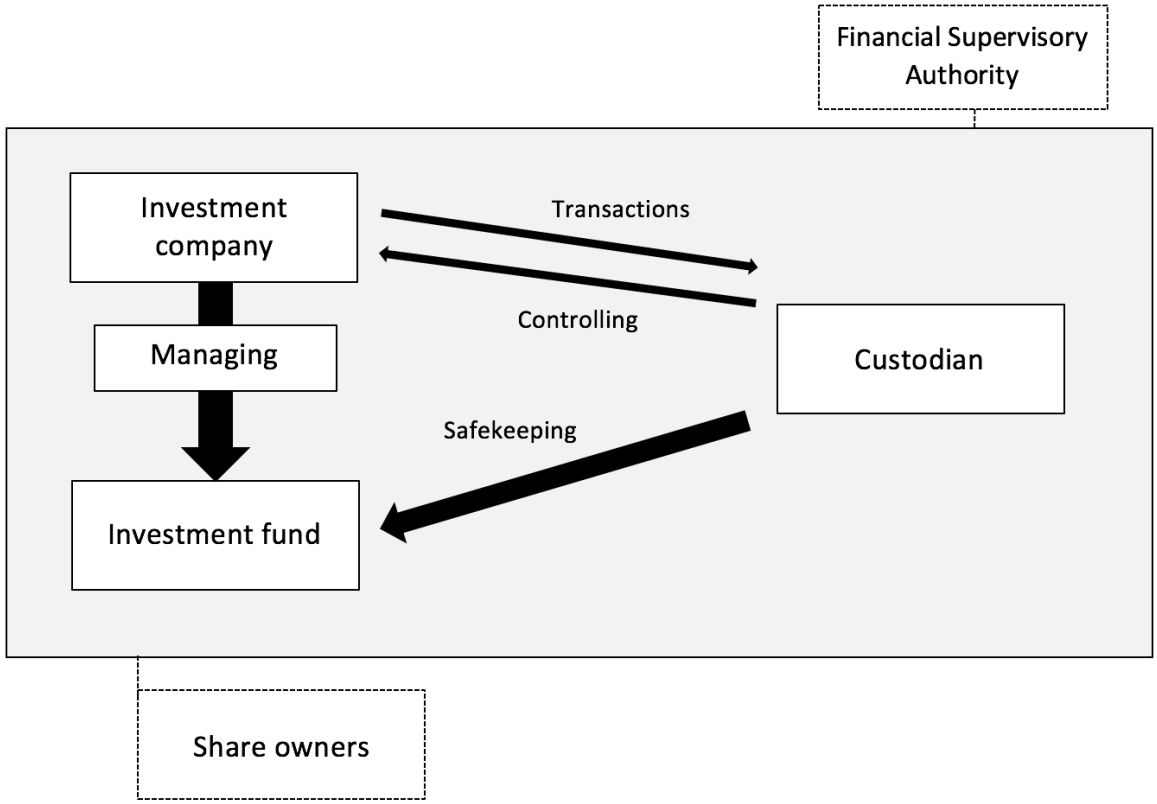

Figure 1. Fundamentals of mutual fund's function

Source: (Puttonen, V. and Repo, E., 2011, 31)

Fundamentals of mutual fund's function can be seen in the Figure 1. Investment company takes care of managing and transactions of the investment fund. Custodian controls the investment company and takes care of the safekeeping of the investment fund. This whole operation is supervised by the Financial Supervisory Authority.

1.3 Risks

Mutual funds risk depends on the funds risk taking policy. Risk taking policy is stated on the brochure and on funds rules. Investor can examine if the fund is using swap agreements from them. Funds that are having a bigger risk, tend to use swap agreements in order to hedge their portfolios and gain profit. (Sijoitusrahastot, a)

Just like with ETFs, Investor should always keep in mind that mutual funds don't have a guarantee of getting return for your invested money back. Value of the investment can increase and decrease. Historical performance of the fund is not a guarantee for the future performance. (Finnish Financial security authority, d)

When the mutual fund is investing into a smaller and less developed markets, its risk increases. Mutual funds that invest in global corporates are considered to have less risk than mutual funds that invest in companies in developed markets. (Finnish Financial security authority, d)

Mutual funds have also market risk like ETFs. Value of the investment can also decrease due poor fund managing. This is called active risk. (Finnish Financial security authority, d)

Mutual funds tend to have also liquidity risk as well. Mutual funds liquidity means its ability to quickly buy or sell shares in the fund. In certain times, it can get hard to do the transactions in the market. That is when liquidity can be considered as a risk. (Finnish Financial security authority, d)

When mutual fund invests in shares which are bought with a foreign currency, there is always an exchange-rate risk. Due to currency rate exchanges, the value of the investment can vary unexpectedly compared to domestic currency. For instance, if mutual funds domestic currency is euro and it invest in shares which are in the USA's market. Every time when dollar exchange rate increases compared to euro exchange rate, the investment will increase same amount. This also works likewise when the exchange rate decreases. (Finnish Financial security authority, d; Sijoitusrahastot, a)

Mutual funds that invest in bonds, also known as bond funds, have an interest rate risk. In other words, when interest rates increase, the value of bond fund decreases. The reason for the loss in the value of the bond fund is because of the possibility to have better interest rate in a new bond investment. There is also a risk that the issuer of the bond fund is not able to pay for the interest or loan. Furthermore, if other investors notice that the issuer ability to pay for the interest or loan has decreased, the value of the bond investment will immediately drop. This is called credit risk. (Finnish Financial security authority, d; Sijoitusrahastot, a)

1.4 Costs

Costs in the fund have a great impact to the fund's long-term performance. Investor will gain more money when the costs and fees in the fund are lower. Fund management companies gets their revenue from subscription, redemption and managing fees. These fees allow the fund management companies to pay wages to their employees and pay for the managing of the fund. All these charges must be seen on the fund's brochure. Mutual funds fees vary very much and type of the fund and funds investment policy determine the amount of the costs. (Puttonen, V. and Repo, E., 2011, 56-58; Pesonen, M., 2015, 130)

Pricing of the fund have started a competition between fund management companies and this have been seen a decline on the costs. For example, a Nordic fund management company, Nordnet AB is offering four different index funds that has no costs at all. Nordnet AB is offering these mainly to attract more customers to their services. (Puttonen, V. and Repo, E., 2011, 56-58; Pesonen, M., 2015, 130)

Most commonly, bond funds and passively managed funds such as exchange traded funds are the most inexpensive. Fund of funds have been becoming more popular recently. This is mainly the reason why international balanced fund's average management fees seem to be lower compared to Finnish balanced funds. Balanced funds invest in mix of stocks, bonds. Nowadays many international balanced funds are also fund of funds. (Puttonen, V. and Repo, E., 2011, 56-58; Zaidi, B., 2016, The Economic Times)

Fund management companies can control the type of investors that invest in their fund by increasing subscription fee. This often means that the fund is for institutions or companies and not for private investors. Other way to control the type of investors that invest in the fund is to set a high minimum subscription. Typically, the funds that are intended for institutions have lower fees and higher minimum subscription. (Pesonen, M., 2015, 131)

Subscription and redemption fees are redeemed because they keep speculative trading low. If there were no subscription and redemption fees at all, shares of the fund would be traded more often and it would increase the managing fee and eventually affect the performance of the fund negatively. (Pesonen, M., 2015, 131)

In the favour of investors, fund management companies have increased their transparency in terms of costs in the fund. The ongoing charges of a fund is often informed on the funds Key Investor Information Document. Ongoing charges consists fund's management

fees, custody fees and other costs. However, it does not consist fees accrued from trading of assets in the fund. (Pesonen, M., 2015, 132)

Funds that are not so transparent tend to have lot of hidden costs which private investor might not be aware of. Private investors often think that they know their funds expenses but they often are aware of a half of them. In Finland, mutual funds have often time limitations for redeeming of the share of the fund. These time limitations can be a surprise for the investor when shares are being redeemed prematurely.

2. EXCHANGE TRADED FUNDS

ETFs can be traded such as regular stocks in the stock market. It is a financial fund, which means that the assets in the fund are property of the shareholders. ETF tracks and tries to imitate the net asset value of a certain index. This enables ETFs to be managed passively and with lower costs than actively managed mutual funds. Besides of stocks, ETF can invest in various asset classes such as bonds and goods. In this case goods, can mean for instance, gold or oil. When one's using "buy and hold" as an investment strategy, ETFs are a great way to implement it. (Kaartinen, A. and Pomell, P., 2012, 7,8) "Buy and hold" is an investment strategy where investor invest in a certain investment and holds it long period of a time before selling it. ETFs can also be used to implement other investment strategies as well. (Kaartinen, A. and Pomell, P., 2012, 7) ETFs can be exchanged at any time during trading day. Such like with stocks. When exchanging mutual funds, one must wait until trading day has ended in order to buy or sell shares of the fund. (Ferri, R. A., 2008, XVII)

2.1 History

In order to understand the history of ETFs, one must know first about the history of index investing. This assist the ability to understand the popularity of ETFs. Indices forms from group of certain markets or market segments securities. For instance, OMX Helsinki index is formed from all the shares listed on the Helsinki stock exchange. The main goal of index investing is to achieve the same rate of return as the index. This is called Beta. (Kaartinen, A. and Pomell, P., 2012, 9)

Harry S. Markowitz wrote in his thesis "Portfolio Selection" in 1952 for the first time how to separate the risk of a single share from the risk of a whole portfolio. As the result of Markowitz's thesis, an investor was able to decrease volatility of the profit and at the same time increase the expected rate of return of his/her portfolio. In the late 60's and early 70's, William Fouse and John McQuowne, employees of Wells Fargo, formed academic models

which assisted them to launch the world's first index fund with a $6 million investment from Samsonite Corporation's pension fund. The world's first open index fund was created in 1976 by John C. Bogle. The index fund was called First Index Investment Trust. In order to accomplish better rate of return than actively managed portfolio, Bogle's idea was to buy and hold a comprehensive and broad portfolio. After various academic researches, large institutions noted the effectiveness of index investing. (Kaartinen, A. and Pomell, P., 2012, 9)

The world's first ETF was born in Toronto, Canada in 1989. It was called Toronto index Participation Fund and it invested in the 35 most exchanged Canadian companies. (Kaartinen, A. and Pomell, P., 2012,9) The first ETF in the United States was established in 1993. This was the creation of the first Standard & Poor's Depositary Receipts, also known as SPDRs S&P 500. Its price was kept near to the S&P 500 index. This allowed only institutional investors gain profit by selling great portions of their shares in the companies that formed the S&P 500 index and buying the ETF when its price was lower than the index. This also works vice versa. SPDRs S&P 500 was success from the beginning and it accumulated $500 million worth of assets in its first year. One of the keys of SPDRs S&P 500 success was its attractiveness towards private investors. The price of the single share in the ETF was approximately tenth of the value of the S&P 500 index. This enabled private investors to buy shares of the ETF easier than ever before. The ETF also gave alternative option to stock brokers to invest their clients' money. (Ferri, R. A.,2008, 14)

When the first ETF of Europe was launched, new version of ETF was in development in the United Stated. Synthetic ETF was launched in 2006 in the United States. It immediately became a success. Investors noted that synthetic ETFs followed the index more precisely with smaller costs. (Kaartinen, A. and Pomell, P., 2012, 10)

2.2 Structure

ETFs are part of Exchange Traded Products, or better known as ETPs. ETPs are divided into three main types: in specie-based ETFs (cash-based), swap-based ETFs and Exchange traded commodities, also known as ETCs. In some cases, ETCs are known as Exchange Traded Notes (ETNs). ETF structures vary by the country, issuer and the product. The greatest difference between structures can be seen in Europe and the USA. (Lamholt, A., 2008, 42, Kaartinen, A. and Pomell, P., 2012, 33)

2.2.1 Physical ETF

Cash-based ETFs, also known as physical ETFs, replicates the underlying assets in the benchmark index completely. In other words, this means physical ETFs have the same weighting of securities in the fund that the benchmark index has. Index is easily replicated and tracked if it consists manageable amount of liquid securities but if the index consists large amount of securities only certain securities are bought. (Miller, S., 2016)

Physical ETFs are transparent which means that the structure is easy to follow because it replicates the index. This is one of the core benefits of the physical ETF. One of the downsides of the physical ETF is the high cost. In physical ETFs, the portfolio manager has to constantly make sure that the weighting of the ETF matches with the underlying index. Portfolio manager must take dividend payments and other various corporate actions into consideration while managing the ETF. (Kaartinen, A. and Pomell, P., 2012, 37, Salkunrakentaja, 2012)

2.2.2 Synthetic ETF

Swap-based ETFs also known as synthetic ETFS uses swap contracts to track benchmark index. In synthetic ETFs, investor do not own securities that are in the ETF. Investor owns a right to gain profit from the securities. In swap contract, ETF agrees to exchange the profit of the benchmark index and the profit of the substitute basket. If the substitute basket generates more profit, swap counterparty is paid by performance of the substitute basket. When the substitute basket is performing worse than the benchmark index, swap counterparty is obligated to pay from the performance of the underlying index. (Havia, P., 2010) The structure and performance of synthetic ETF can be seen in Figure 2.

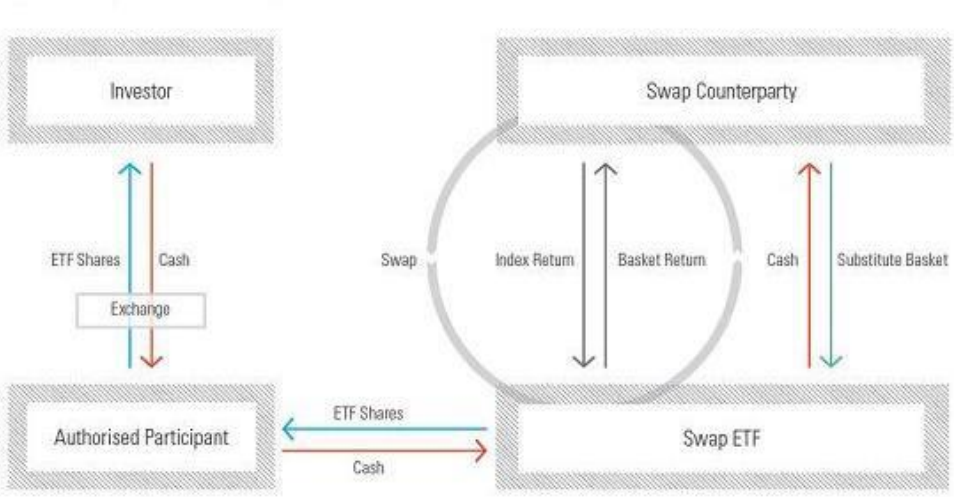

Figure 2. Structure and performance of synthetic ETF

Source: (Morningstar, 2011)

Synthetic ETFs are usually cheaper than physical ETFs due the possibility to manage them more passively. Also, low number of trading transactions and reinvesting of dividends decreases costs. In addition, synthetic ETFs tend to have less tracking error and drag compared to the index than physical ETFs have. This is simply because of synthetic ETFs use dividend withholdings to narrow the gap between itself and the benchmark index. Synthetic ETFs are more common in European ETF market than physical ETFs. (Morningstar, b)

2.3 Trading

As mentioned earlier, ETFs can be traded at any time during the trading day. This makes ETFs more flexible compared to mutual funds which you can trade once or even less often. ETFs can be bought and sold through banks or investment firms. There is a great variety of ETFs available in the USA and Germany. Usually market maker or other investor act as a counterparty in the trade. ETF trading has similar commission fees with stock trading. (Kaartinen, A. and Pomell, P.2012, 39, Finnish Financial security authority, a)

ETF trading happens in two different market. These markets are primary and secondary markets. In primary market, the investment fund owner isn't in a direct contact with the private investor when shares of the ETF is being bought or sold.

ETFs are listed in the all the main stock markets throughout the world. Many ETFs have similar listings in many stock markets and currencies. There is only few ETFs listed in Finnish stock market. However, ETF from foreign stock markets can be bought through many Finnish stockbrokers.

2.4 Risks

Investor should always keep in mind that ETFs doesn't have a guarantee of getting return for your invested money back. This also applies to any other fund, stock or bond investment. (iShares, a) One of the biggest risk in ETFs is market risk. When the market is declining the index also declines. This makes the ETF also decline since it tracks the index. The market risk affects the performance of the ETF just like it would affect any other investment. (Yahoo Finance, a)

While selecting the ETF, investor should bear in mind that ETF's name doesn't always indicate which types of securities the ETF holds or in which markets it is investing. ETF's name can be often misleading. This type of risk is called Label risk. The label risk can also appear in international ETF investing when there is limited amount of information available about the ETF. (Finnish Financial security authority, b)

All the index funds have a risk called tracking error. It is the difference between the index and the fund. When the tracking error is zero, the fund or the ETF is tracking the index perfectly. Passively managed ETFs often differs from the index less that actively managed ETFs since actively managed ETFs must pay more often commission fees and they tend to have greater managing costs. (Finnish Financial security authority, b)

Fund managers tries to keep the fund as close as possible to the underlying index. In an ideal situation, tracking error is zero but it occurs rarely because the fund must keep some of the assets in cash. This allows the fund to pay for the commission fees and managing costs. In addition, some of the indices the ETFs follows, holds illiquid securities which can't be purchased into the fund. When the underlying index consist illiquid securities, the fund

manager must adjust the fund with liquid securities. This procedure tends to increase tracking error. (Ferri, R. A., 2008, 70)

$$TE = \sqrt{\frac{\Sigma_{i=1}^{N}(R_P - R_B)^2}{N-1}} \quad (1)$$

where

$TE -$ Tracking error

$R_P -$ Return of fund

$R_B -$ Return of benchmark

$N -$ Number of periods

Source: (Sp-rahastoyhtiö, 2017)

ETF funds which are managed actively increases the risk of the ETF. When the ETF is actively managed, more trading is done which can lead to bad decisions done by the fund manager. (Finnish Financial security authority, b)

When one is investing in synthetic ETF, there is always a counterparty risk. This means that the investor has a risk of not getting the money from the performance of the underlying index as agreed in the swap contract. However, in Europe, the maximum loss is 10% of the net asset value (NAV) of the ETF because of the counterparty risk. The loss is limited to 10% of the NAV because of UCITS III directive. UCITS are Europe Union's directives which try to simplify investment policies and increase the investor protection. In addition, if the fund is Multi Swap structured, the counterpart risk is usually lower. Many ETFs have stricter rules in terms of the counterparty risk. For instance, the maximum risk level in terms of counterparty risk is chosen in advance. When the maximum risk level is reached, the value of the swap is set on a lower risk level. This procedure is called swap agreement reset. (Kaartinen, A. and Pomell, P., 2012, 33; Salkunrakentaja, 2012; Morningstar, a)

2.5 Costs

Profit of the ETF isn't just dependent on the gain of an underlying index or performance of a talented fund manager. One of the most important profit declining factor in the ETF is commission costs of the fund. Commission cost will be always charged by the investment company, without depending on the fact did the ETF gain or lose profit. (Kallunki, J. and Martikainen, M. and Niemelä, J., 2007, 258-259)

Nearly all ETFs have significantly smaller costs compared to mutual funds. This is mainly because great number of ETFs do not try to achieve active profit. When the index is passively replicated, it decreases the amount of trading transactions done compared to actively managed funds. This is the number one reason why trading commissions are smaller in the ETFs than in the mutual funds. (Kaartinen, A. and Pomell, P., 2012, 15)

Apart from traditional funds, ETF funds do not contain subscription and redemption charges. Individual investor is obligated to pay for the normal equity brokerage commissions which have been agreed with the broker. (Finnish Financial security authority, c)

There is a varying difference between bid and ask quotes for an ETF share. This difference is called spread. This can be considered as a cost for the ETF if the investor is doing small repetitive investments. With a small repetitive investment, also total brokerage commissions will increase rather high. (Kaartinen, A. and Pomell, P., 2012, 15)

Some of the ETF brokers don't charge for the commission. This can be used to attract more potential customers/investors to start to use their investing services. In Finland, Nordnet AB has chosen not to charge for the commission. This requires investors to start invest in ETFs every month. At the moment, Nordnet AB is providing about 50 different ETFs from three different issuers, such as db x-trackers (Deutche Bank), iShares (Blackrock) and Xact (Handelsbanken). (Nordnet AB)

When shares of the ETF are subscribed, or redeemed, no fees are not being charged. This is completely different apart traditional investment funds. The reason why subscription and redemption fees are not being charged is because of Authorized Participant (AP), who creates and redeems shares of the fund. This allows the ETF to have all its money invested in the securities and not to have any cash in reserve for possible redemptions of the fund. Furthermore, because of this procedure, any cash drag to the benchmark index will not

happen. Cash drag is hidden cost especially in emerging markets. (Kaartinen, A and Pomell, P., 2012, 15)

All in all, ETFs are much more likely to have greater performance in a long-term investing due the smaller costs compared to actively managed funds. Costs always eat up the performance of the fund. The effect of compounding interest is much easier to detect. This of course require that the fund in comparison has performed equally with the ETF. Also, some of the ETFs are tax efficient when they reinvest the earned dividends. This allows the ETF to avoid tax payments for the dividends.

3. RESEARCH METHOD AND RESULTS

This research will be comparison analysis between actively managed funds and ETFs. The analysis has been done by selecting actively managed funds and ETFs which have similarities and by forming a fund pair of them which have been compared together. The research examines the performance and performance after managing costs of the funds between the years 2012 and 2016. The research will also examine their risk-adjusted return (Sharpe ratio) and volatility.

3.1 Methodology

All the tables in this research have been done with Microsoft Excel. This research was conducted using quantitative methods, namely gathering the data including Share ratios, volatility, performance and costs from Morningstar's database, fund issuers webpage and Investment Research Finland's website. Morningstar Inc. is one of the most highly ranked independent investment research provider in the world. It has won numerous awards and it is known worldwide for unbiased investment researches. Morningstar publishes great amount of financial data from ETFs worldwide. This financial data contains historical performances of ETFs and other valuable information for a private investor such as funds costs and funds investing policy. Therefore, Morningstar can be considered as a trustworthy source.

This research consists nine ETFs and nine actively managed funds which is 18 funds total. All the funds have been selected so that they invest in European stocks. There are nine fund pairs total and they are formed from one actively managed fund and one ETF. (Table 1.) Each pair invest in the same market equity and has the same index as a benchmark. This will make the comparison more competent and rational. The amount of the actively managed funds is limited because of a small supply of actively managed funds, in Finnish stock exchange, which would be valid to be compared with European ETFs. It is also the reason why the examined time for performance of the funds is only five years.

Table 1. Fund pairs and their indices & equity markets

Fund pairs	Index & Market
Seligson & Co OMX Helsinki 25 ETF	NASDAQ OMX Helsinki 25 PR EUR
Nordea Suomi Kasvu	Finland
Amundi ETF MSCI Nordic UCITS ETF	MSCI Nordic Countries NR EUR
Aktia Nordic B	Nordic
ComStage DAX® TR UCITS ETF	FSE DAX TR EUR
JPMorgan Funds - Germany Equity Fund A (dist) - EUR	Germany, Large-Cap Equity
Amundi ETF CAC 40 UCITS ETF DR D	Euronext Paris CAC 40 NR EUR
Atout France C	France, Large-Cap Equity
db x-trackers MSCI Europe Small Cap Index UCITS ETF	MSCI Europe Small Cap NR EUR
Danske Invest SICAV - Europe Small Cap A	Europe, Small-Cap Equity
ComStage EURO STOXX 50® NR UCITS ETF	EURO STOXX 50 NR EUR
FIM Eurooppa	Europe, Large-Cap Equity
Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C	MSCI Europe High Div Yld NR EUR
Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation	Europe, Equity income
Amundi ETF MSCI Switzerland UCITS ETF EUR	MSCI Switzerland NR CHF
Fidelity Funds - Switzerland Fund Y-Acc-CHF	Switzerland, Large-Cap Equity
iShares STOXX Europe Mid 200 UCITS ETF	STOXX Europe Mid 200 NR EUR
Nordea 1 - European Small and Middle Cap Equity Fund	Europe, Flex-Cap Equity

Source: Morningstar, 2017, March

Performance of the funds have been analysed by calculating five-year annualised return for each fund. Also, the five-year annualised return after managing cost have been calculated in order to analyse if active fund managing is more profitable than passive managing when the higher managing costs are taken into consideration. ETF and actively managed fund averages for five-year annualised return and five-year return performance have been calculated as well. These calculations were conducted by using the yearly returns for the funds (Table 2.) and their maximum managing costs. (Table 3.) Annualised return was

calculated by using following formula and annualised return after managing cost were calculated with formula 3.

$$AR = ((1 + r_1) \times (1 + r_2) \times (1 + r_3) \times \dots (1 + r_n))^{\frac{1}{n}} - 1$$

where

$AR -$ annualised return (2)

$r_1 -$ first year's annual return

$r_2 -$ second year's annual return

$r_3 -$ third year's annual return

$r_n -$ n year's annual return

n = number of years

Source: (Investopedia, 2017, a)

$$AR_{mc} = ((1 + r_1 - m_c) \times (1 + r_2 - m_c) \times (1 + r_3 - m_c) \times \dots (1 + r_n - m_c))^{\frac{1}{n}} - 1$$

where (3)

$AR_{mc} -$ annualised return after managing costs

$m_c \quad -$ managing cost per year

Source: Compiled by the author

Table 2. Fund pairs and their yearly returns

Fund pairs	2012	2013	2014	2015	2016
Seligson & Co OMX Helsinki 25 ETF	19,65 %	19,91 %	7,42 %	13,42 %	1,18 %
Nordea Suomi Kasvu	15,70 %	29,04 %	4,78 %	12,96 %	9,64 %
Amundi ETF MSCI Nordic UCITS ETF	19,65 %	19,91 %	7,42 %	13,42 %	-1,18 %
Aktia Nordic B	18,42 %	21,62 %	8,99 %	22,60 %	3,42 %
ComStage DAX® TR UCITS ETF	29,68 %	25,36 %	2,85 %	8,97 %	5,78 %
JPMorgan Funds - Germany Equity Fund A (dist) – EUR	28,34 %	29,13 %	0,04 %	15,34 %	0,03 %
Amundi ETF CAC 40 UCITS ETF DR D	19,93 %	21,58 %	2,47 %	13,42 %	7,50 %
Atout France C	19,93 %	25,09 %	1,30 %	13,09 %	4,86 %
db x-trackers MSCI Europe Small Cap Index UCITS ETF	27,23 %	33,22 %	6,25 %	22,68 %	1,51 %
Danske Invest SICAV - Europe Small Cap A	30,15 %	23,33 %	0,90 %	22,48 %	-0,63 %
ComStage EURO STOXX 50® NR UCITS ETF	20,17 %	21,95 %	4,75 %	7,62 %	2,59 %
FIM Eurooppa	27,55 %	25,38 %	1,46 %	7,13 %	4,28 %
Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C	6,37 %	21,58 %	10,05 %	7,94 %	3,37 %
Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation	12,72 %	15,79 %	-5,71 %	0,54 %	17,54 %
Amundi ETF MSCI Switzerland UCITS ETF EUR	19,35 %	19,82 %	13,97 %	12,76 %	-3,80 %
Fidelity Funds - Switzerland Fund Y-Acc-CHF	15,50 %	34,81 %	3,48 %	4,32 %	12,68 %
iShares STOXX Europe Mid 200 UCITS ETF	19,68 %	20,64 %	6,55 %	16,17 %	-2,69 %
Nordea 1 - European Small and Middle Cap Equity Fund	25,02 %	18,06 %	6,47 %	22,15 %	0,51 %

Source: Morningstar, 2017, March

Funds' yearly returns are listed on the table above. These numbers are being used to calculate their annualised return (formula 2.) and annualised return after managing costs (formula 3.) from the beginning of 2012 to the end of 2016. (Table 2.)

Table 3. Fund pairs managing costs.

Fund pairs	Max managing cost (%)
Seligson & Co OMX Helsinki 25	0,17 %
Nordea Suomi Kasvu	1,40 %
Amundi ETF MSCI Nordic UCITS ETF	0,25 %
Aktia Nordic B	1,80 %
ComStage DAX® TR UCITS ETF	0,08 %
JPMorgan Funds - Germany Equity Fund A (dist) - EUR	1,50 %
Amundi ETF CAC 40 UCITS ETF DR D	0,25 %
Atout France C	1,20 %
db x-trackers MSCI Europe Small Cap Index UCITS ETF	0,30 %
Danske Invest SICAV - Europe Small Cap A	1,60 %
ComStage EURO STOXX 50® NR UCITS ETF	0,08 %
FIM Eurooppa	1,80 %
Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C	0,23 %
Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation	1,50 %
Amundi ETF MSCI Switzerland UCITS ETF EUR	0,25 %
Fidelity Funds - Switzerland Fund Y-Acc-CHF	0,80 %
iShares STOXX Europe Mid 200 UCITS ETF	0,19 %
Nordea 1 - European Small and Middle Cap Equity Fund	1,30 %
ETF average	**0,20 %**
Actively managed fund average	**1,43 %**

Source: Morningstar, 2017, March

Funds' yearly maximum managing costs are listed on the table above. These figures are being used to calculate the annualised return after managing costs (formula 3.) from the beginning of 2012 to the end of 2016. In addition, managing cost differences within the fund pair and between ETFs and actively managed funds, can be easily seen. (Table 3)

The analysed volatilities in this research are fund volatilities for 12 months. The data for volatilities were collected in March 2017 and a Microsoft Excel table were formed based on the data.

Sharpe ratio is widely used throughout the financial sector. It was developed by William F. Sharpe in the year 1966. The ratio indicates the performance of treasurer or

portfolio and their risk-adjusted return. It basically refines how much the investment has generated profit compared to a risk-free rate of return per one volatility percent. The greater the volatility is, the greater the profit should be. In addition, the ratio will be high when the investment has performed better compared to the risk it is taking. If the ratio is positive, the investment has been profitable and if it is negative, it indicates that it has performed more poorly compared to the performance of a risk-free investment. Government bond could be considered as a risk-free investment. (Kallunki, J. and Martikainen, M. and Niemelä, J., 2007, 247; Myllyoja, N., 2015, Nordnet AB)

This research examines current five-year Sharpe ratio for the fund pairs. All the Sharpe ratios were gathered in March 2017. Sharpe ratio is calculated by reducing risk-free rate of return from the expected return of the investment. The three month Euribor can be used as a risk-free rate of return. After the reduction, it the number will be divided by volatility, also known as the risk. (Myllyoja, N., 2015)

$$Sharpe\ ratio = \frac{\bar{r}_p - r_f}{\sigma_p} \quad (4)$$

where,

$\bar{r}_p -$ expected return of the portfolio or investment

$r_f -$ risk-free rate of return

$\sigma_p -$ volatility

Source: (Investopedia, 2017, b)

3.2 Results

3.2.1 Performance

According to the research results on Table 4, the five-year annualised return of the funds has been positive. Both ETFs and actively managed funds have performed rather nicely. Even though, every fund had the lowest yearly return in 2016, all the funds have easily been able to end the five year with a positive note. In addition, the yearly returns have fluctuated

between the years 2012 and 2016. It can be also noticed that there has been a decline in the market trend in Europe. (Table 2.)

Table 4. Five-year annualised return and five-year annualised return after managing costs for the fund pairs (%)

Fund pairs	Anlsd return (5 yr)	Anlsd return after managing costs (5 yr)
Seligson & Co OMX Helsinki 25 ETF	12,08	11,91
Nordea Suomi Kasvu	**14,14**	**12,74**
Amundi ETF MSCI Nordic UCITS ETF	11,55	11,30
Aktia Nordic B	**14,76**	**12,95**
ComStage DAX® TR UCITS ETF	**14,02**	**13,94**
JPMorgan Funds - Germany Equity Fund A (dist) - EUR	13,85	12,34
Amundi ETF CAC 40 UCITS ETF DR D	**12,74**	**12,49**
Atout France C	12,50	11,30
db x-trackers MSCI Europe Small Cap Index UCITS ETF	**17,53**	**17,23**
Danske Invest SICAV - Europe Small Cap A	14,54	12,93
ComStage EURO STOXX 50® NR UCITS ETF	11,13	**11,05**
FIM Eurooppa	**12,63**	10,82
Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C	**9,69**	**9,46**
Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation	7,78	6,27
Amundi ETF MSCI Switzerland UCITS ETF EUR	12,07	11,82
Fidelity Funds - Switzerland Fund Y-Acc-CHF	**13,63**	**12,82**
iShares STOXX Europe Mid 200 UCITS ETF	11,70	11,51
Nordea 1 - European Small and Middle Cap Equity Fund	**14,05**	**12,74**
ETF average	12,50	**12,30**
Actively managed fund average	**13,10**	11,66

Source: Compiled by the author's calculations based on data provided in Table 2 & Table 3.

As mentioned earlier all the funds had positive five-year annualised return. The best five-year annualised returns, during the time period, had following funds: db x-trackers MSCI Europe Small Cap Index UCITS ETF (17,53%), Aktia Nordic B (14,76%) and Danske Invest

SICAV - Europe Small Cap A (14,54%). The worst five-year annualised returns had: Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation (7,78%), Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C (9,69%) and ComStage EURO STOXX 50® NR UCITS ETF (11,13%). There were four fund pairs where the ETF outperformed is actively managed fund pair. The market equities for these pairs were Germany Large-Cap Equity, France Large-Cap Equity, Europe Small-Cap Equity and Europe Equity income. However, the average five-year annualised return for actively managed funds were higher than ETFs had on average. (Table 4.)

Supposedly, all ETFs in the fund pairs had smaller managing costs per year than actively managed funds had. This had an affection on the change between five-year annualised return and five-year annualised return after managing costs. Five out of nine ETFs had better five-year annualised return after managing costs than their actively managed fund pair. Four of these were the same fund pairs than earlier. In addition to these fund pairs was fund pair that invested in Europe Large-Cap Equity. Funds with the highest five-year annualised return after managing costs were db x-trackers MSCI Europe Small Cap Index UCITS ETF (17,23%), Aktia Nordic B (12,95%), Danske Invest SICAV - Europe Small Cap A (12,93%), Fidelity Funds - Switzerland Fund Y-Acc-CHF (12,82%) and Nordea Suomi Kasvu (12,74%). On average, ETFs had better five-year annualised return after managing costs than actively managed funds had by 0,64 percentage points. (Table 4.)

According to the research, the biggest difference of five-year annualised return had Aktia Nordic B and Amundi ETF MSCI Nordic UCITS ETF. The difference between this fund pair were 3,21 percentage points. This pair invest the Nordic market equity. The difference in performance between this fund pair decreases quite much when five-year annualised return after costs is calculated. Aktia Nordic B still have performed better than Amundi ETF MSCI Nordic UCITS ETF but the difference between them is only 1,65 percentage points. (Table 4.)

The largest difference in five-year annualised return after costs had db x-trackers MSCI Europe Small Cap Index UCITS ETF and Danske Invest SICAV - Europe Small Cap A, total difference of 4,30 percentage points. This fund pair invest in Europe's Small-cap equity. A major factor for the large difference is db x-trackers MSCI Europe Small Cap Index UCITS ETF's small managing cost (0,30%). (Table 4.)

3.2.2 Sharpe ratio

This research examines risk-adjusted return, also known as Sharpe ratio, of the funds. Five-year Sharpe ratios of funds have been gathered into a Table 5. This means that the Sharpe ratio is based on the average return of the fund during five years. Due limited accessibility to all the fund data, it was only possible to get the current (March 2017) Sharpe ratios for the funds. Immediately, can be seen that every single fund has been able to get positive five-year Sharpe ratio. In other words, every single funds' risk taking have been profitable.

Table 5. Sharpe ratios of the fund pairs

Fund pairs	**Sharpe ratio (5 year)**
Seligson & Co OMX Helsinki 25 ETF	1,0
Nordea Suomi Kasvu	0,8
Amundi ETF MSCI Nordic UCITS ETF	0,75
Aktia Nordic B	0,9
ComStage DAX® TR UCITS ETF	0,72
JPMorgan Funds - Germany Equity Fund A (dist) - EUR	0,85
Amundi ETF CAC 40 UCITS ETF DR D	0,8
Atout France C	0,88
db x-trackers MSCI Europe Small Cap Index UCITS ETF	1,23
Danske Invest SICAV - Europe Small Cap A	0,9
ComStage EURO STOXX 50® NR UCITS ETF	0,76
FIM Eurooppa	0,7
Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C	0,83
Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation	0,4
Amundi ETF MSCI Switzerland UCITS ETF EUR	1,03
Fidelity Funds - Switzerland Fund Y-Acc-CHF	0,9
iShares STOXX Europe Mid 200 UCITS ETF	0,74
Nordea 1 - European Small and Middle Cap Equity Fund	0,9
ETF average	0,873
Actively managed fund average	0,803

Source: Compiled by the author

The best performed funds, in terms of five-year Sharpe ratio, were db x-trackers MSCI Europe Small Cap Index UCITS ETF (1,23), Amundi ETF MSCI Switzerland UCITS ETF EUR (1,03) and Seligson & Co OMX Helsinki 25 ETF (1,0). Notable here has been that three

ETFs were the ones that had the best Sharpe ratios. The worst Sharpe ratios had Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation (0,4), FIM Eurooppa (0,7) and ComStage DAX® TR UCITS ETF (0,72). (Table 5.)

ETFs on average had 0,873 and actively managed fund on average had 0,803 as their Sharpe ratio. The difference between them is only 0,070 units. (Table 5.)

Within the fund pair, the largest difference between the Sharpe ratios had Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C and Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation. The difference between these funds were 0,43 units. This fund pair invest in Europe's income equity. (Table 5.)

3.2.3 Volatility

The volatility of the funds was examined by gathering funds 12-month volatility percent. Again, due the limited access to all the fund data, current (March 2017) 12-month volatility had to be used for this research. All the volatilities for the funds have been listed in the Table 3. In this research, volatilities vary between 9% and 20,6%.

The lowest volatilities had Atout France C (9%), Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C (16,70%) and Amundi ETF MSCI Switzerland UCITS ETF EUR (12,26%) The highest volatilities had Nordea 1 - European Small and Middle Cap Equity Fund (20,60%), Seligson & Co OMX Helsinki 25 ETF (20,60%) and Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation (20,40%).

When the volatilities within the fund pairs is examined, seven out of nine fund pairs actively managed fund had higher volatility than the ETF. The largest difference within the fund pair had Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation and Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C. The difference between these two fund were astonishing 9,83 percentage points. Moreover, actively managed fund on average had higher volatility than ETFs had on average. The difference between them were 2,14 percentage points. (Table 6.)

It can be said that according to this research, ETFs have had lower risk in terms of volatility than actively managed funds have. Atout France C fund have had considerable low volatility compared to its rather good performance in terms of its yearly return. But because this research does not provide a data for the time between January and March 2017, the fund's performance could be worse than the performance between 2012-2016. (Table 6. & Table 4.)

Table 6. Volatilities of the fund pairs (%)

Fund pairs	Volatility (12 months)
Seligson & Co OMX Helsinki 25 ETF	**20,60**
Nordea Suomi Kasvu	18,40
Amundi ETF MSCI Nordic UCITS ETF	12,85
Aktia Nordic B	**19,40**
ComStage DAX® TR UCITS ETF	16,23
JPMorgan Funds - Germany Equity Fund A (dist) - EUR	**18,40**
Amundi ETF CAC 40 UCITS ETF DR D	**18,37**
Atout France C	9
db x-trackers MSCI Europe Small Cap Index UCITS ETF	16,70
Danske Invest SICAV - Europe Small Cap A	**17,50**
ComStage EURO STOXX 50® NR UCITS ETF	17,23
FIM Eurooppa	**20,20**
Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C	10,57
Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation	**20,40**
Amundi ETF MSCI Switzerland UCITS ETF EUR	12,26
Fidelity Funds - Switzerland Fund Y-Acc-CHF	**16,30**
iShares STOXX Europe Mid 200 UCITS ETF	16,13
Nordea 1 - European Small and Middle Cap Equity Fund	**20,60**
ETF average	**15,66**
Actively managed fund average	**17,80**

Source: Compiled by the author

3.2.4 Summary of results

All the yearly reruns have been gathered into Table 2. It can be clearly seen that all the funds have had a positive performance during examined time period. Most of the funds have higher five-year annualised returns than investment funds usually have. It can also be said that ETFs have outperformed the actively managed funds when the managing cost is taken to consideration. The variance of five-year annualised return between fund pairs/market equities, were 9,75 percentage points. Moreover, the variance between the fund pairs grew to 11 percentage points when five-year annualised returns after costs were examined. (Table 7.)

In this research, the relation of the funds annualised yearly return between Sharpe ration cannot be compared due their difference in the examined time period.

Table 7. Summary of results

Fund pairs	Anlsd return (5yr)	Anlsd return after managing costs (5yr)	Sharpe ratio (5 yr)	Volatility (12 months)
Seligson & Co OMX Helsinki 25	12,08 %	11,91 %	1	9 %
Nordea Suomi Kasvu	14,14 %	12,74 %	0,8	10,57 %
Amundi ETF MSCI Nordic UCITS ETF	11,55 %	11,30 %	0,75	12,26 %
Aktia Nordic B	14,76 %	12,95 %	0,9	12,85 %
ComStage DAX® TR UCITS ETF	14,02 %	13,94 %	0,72	16,13 %
JPMorgan Funds - Germany Equity Fund A (dist) - EUR	13,85 %	12,34 %	0,85	16,23 %
Amundi ETF CAC 40 UCITS ETF DR D	12,74 %	12,49 %	0,8	16,30 %
Atout France C	12,50 %	11,30 %	0,88	16,70 %
db x-trackers MSCI Europe Small Cap Index UCITS ETF	17,53 %	17,23 %	1,23	17,23 %
Danske Invest SICAV - Europe Small Cap A	14,54 %	12,93 %	0,9	17,50 %
ComStage EURO STOXX 50® NR UCITS ETF	11,13 %	11,05 %	0,76	18,37 %
FIM Eurooppa	12,63 %	10,82 %	0,7	18,40 %
Amundi ETF MSCI Europe High Dividend Factor UCITS ETF C	9,69 %	9,46 %	0,83	18,40 %
Parvest Sustainable Equity High Dividend Europe Classic-Capitalisation	7,78 %	6,27 %	0,4	19,40 %
Amundi ETF MSCI Switzerland UCITS ETF EUR	12,07 %	11,82 %	1,03	20,20 %
Fidelity Funds - Switzerland Fund Y-Acc-CHF	13,63 %	12,82 %	0,9	20,40 %
iShares STOXX Europe Mid 200 UCITS ETF	11,70 %	11,51 %	0,74	20,60 %
Nordea 1 - European Small and Middle Cap Equity Fund	14,05 %	12,74 %	0,9	20,60 %
ETF average	**12,50 %**	**12,30 %**	**0,873**	**15,66 %**
Actively managed fund average	**13,10 %**	**11,66 %**	**0,803**	**17,80 %**

Source: Compiled by the author

Sharpe ratio has been used to evaluate the risk-adjusted return of the funds. Sharpe ratio of the ETFs have been higher on average than actively managed funds had. So, it can be said that ETF's bigger risk taking have been profitable. Even though, funds inside the fund

pairs invested in the same market equity and has the same index as benchmark, six ETFs had better Sharpe ratio than their fund pair. (Table 7.)

When all these factors (yearly returns, Sharpe ratio and volatility) are taken into consideration, db x-trackers MSCI Europe Small Cap Index UCITS ETF has performed best compared to all the other funds. Its annualised five-year return and annualised five-year return after managing costs has been the highest of all. The second-best fund with the highest annualised five-year return after managing costs is 3,29 percentage points lower than db x-trackers MSCI Europe Small Cap Index UCITS ETF. Also, its Sharpe ratio (1,23) was the best among all the examined funds, which means that db x-trackers MSCI Europe Small Cap Index UCITS ETF has been able to turn the risk taking into a profit the best. This ETF invest in the Europe's Small-cap equity and has MSCI Europe Small Cap NR USD as its benchmark index. (Table 7.)

CONCLUSIONS

The aim of this research was to evaluate if ETFs is a good financial instrument compared to tradition actively managed funds. Furthermore, a goal of this research was to evaluate in which market equities ETFs have been able to perform better than the actively managed fund. One of the goals was to examine the affection of managing costs to the portfolios performance.

There was total of 18 funds, nine ETFs and nine actively managed funds, in this research. Funds were gathered into a fund pairs in order to examine the differences between ETFs and actively managed funds within the market equity and benchmark index. The performances of the funds were analysed based on the yearly returns of the funds during 2012 and 2016. Five-year annualised returns were calculated based on the yearly returns. (Table 2.) Also, five-year annualised returns after managing cost were calculated. In addition, funds current (March 2017) five-year risk-adjusted return, Sharpe ratio, and the current (March 2017) 12-month volatility of the funds were compared.

The results of this research clearly show the differences between ETFs and actively managed funds, in terms of performance, risk and risk-adjusted return. According to these result, ETFs have performed better than actively managed funds during 2012 and 2016 when the managing costs are taken into consideration. However, five out of nine actively managed funds have been able to get better five-year annualised return before managing costs. The managing costs and all the other costs often pass out of private investors mind when one is selecting a fund to invest their money.

The three best actively managed funds in terms of yearly return after managing costs were Aktia Nordic B, Danske Invest SICAV - Europe Small Cap A and Nordea 1 - European Small and Middle Cap Equity Fund. Their average five-year annualised return after managing costs were 12,87 percent. The three best ETFs in terms of yearly return after managing costs were db x-trackers MSCI Europe Small Cap Index UCITS ETF, ComStage DAX® TR UCITS ETF and Amundi ETF CAC 40 UCITS ETF DR D. Their average five-year annualised return after managing costs were 14,56 percent.

One of the biggest differences between ETFs and actively managed funds is their investing strategy (passive and active) and their costs. If the difference between them can be seen already in five years, the difference will only increase when the investment time horizon grows. This of course, requires that the market act in the way it have acted during 2012 and 2016, and historical performance is not a guarantee of future results. Basically, if the actively managed fund gets the same yearly return after managing costs with ETF, its yearly return before managing cost need to be higher than ETFs yearly return before managing cost. Also, their difference between yearly returns before managing costs and difference between the managing costs should be equal so that their yearly return after managing costs is equal.

The results also show that ETFs had better five-year risk-adjusted return than actively managed funds have. Five out of nine ETFs had better five-year Sharpe ratio than their fund pair. This clearly indicates that actively managed fund's portfolio managers are not able to turn the risk they are taking into profit. This also means that passive investing strategy have been able to gain more profit from their risk than active investing strategy. In terms of risk-adjusted return, ETF have turned out to be better financial instrument during last five years than actively managed funds have been.

During the examined time period, European stock market has been in steady rise. The reason for the rise has been record low interested rates and positive assumption of growth among investors. The reason why stock market in 2016 did not perform as good as in the previous years was simply because of the political events that occurred during 2016. When Great Britain voted for the EU exit, or more commonly known as Brexit, European stock market plummeted. Furthermore, the USA's presidential election in 2016 had a negative affection in the stock market when Donald J. Trump were elected as USA's next president.

A hypothesis of this research based on the two financial articles by Financial Times and Kauppalehti. They stated that 99 percent of actively managed US equity funds sold in Europe have underperformed or in other words, lost to the benchmark index. The hypothesis was that majority of actively managed European equity funds have performed similarly and underperformed compared to the ETF with the same benchmark index. This research clearly points out that it can be said that the hypothesis has been partly correct. ETFs which tracks the benchmark index, have outperformed compared to the actively managed funds when the costs are taken into consideration. But the number of the funds examined haven't been big enough

to fulfil the hypothesis completely. (Kyynäräinen, T., Kauppalehti, 2016 & Newlands, C. and Marriage, M., Financial Times, 2016)

Comparison analysis between actively managed funds and exchange traded funds worldwide would be rather interesting topic as a follow-up research. It would solve if ETFs great performance in Europe have been only regional phenomenal or have ETFs worldwide performed as good as in Europe. In addition, it would be interesting to know in which regions ETFs have performed the best and in which regions ETFs have struggled.

REFERENCES

Ferri, R. A. (2008) The ETF Book

Finnish Financial security authority,
a:
http://www.finanssivalvonta.fi/fi/Finanssiasiakas/Tuotteita/Sijoittaminen/ETF/kaupankaynti/Pages/Default.aspx (22.03.2017)
b:
http://www.finanssivalvonta.fi/fi/Finanssiasiakas/Tuotteita/Sijoittaminen/ETF/riskit/Pages/Default.aspx (22.03.2017)
c:
http://www.finanssivalvonta.fi/fi/Finanssiasiakas/Tuotteita/Sijoittaminen/ETF/kulut_ja_tuotot/Pages/Default.aspx (23.03.2017)
d:
http://www.finanssivalvonta.fi/fi/Finanssiasiakas/Tuotteita/Sijoittaminen/Sijoitusrahastot/Riskit/Pages/Default.aspx (23.03.2017)

iShares:
https://www.ishares.com/fi/yksityissijoittajille/fi/koulutus/tuotevalikoimamme/edut-ja-riskit
(20.02.2017)

Havia, P. (2010): Johdatus ETF:iin Osa 6: Swap pohjaiset ETF:t:
http://www.taloudellinenriippumattomuus.com/2010/04/johdatus-_etfiin-osa-6-swap-pohjaiset.html (13.03.2017)

Investopedia:
a: http://www.investopedia.com/terms/a/annualized-total-return.asp (03.05.2017)
b: http://www.investopedia.com/terms/s/sharperatio.asp (03.05.2017)

Kaartinen, A. and Pomell, P. (2012) ETF – Avain monipuoliseen sijoittamiseen

Kallunki, J. and Martikainen, M. and Niemelä, J. (2017) Arvopaperisijoittaminen

Kyynäräinen, T. (2016) Kauppalehti: "Tämä on pelottavaa" - 99 prosenttia jenkkiosakerahastoista häviää indeksille:
https://www.kauppalehti.fi/uutiset/tama-on-pelottavaa---99-prosenttia-jenkkiosakerahastoista-haviaa-indeksille/iXMUxhyK?ref=twitter:8157 (20.04.2017)

Lamholt, A. (2008), The Markit Magazine: Spreading the word
http://www.markit.com/news/mk_spreading-the-word.pdf (05.02.2017)

Miller, S. (2016) Scalable Capital article: “Physical vs Synthetic ETFs: Everything You Need to Know”:
https://uk.scalable.capital/investment-strategy/physical-vs-synthetic-etfs-everything-need-know/ (13.03.2017)

Morningstar (2011), Synthetic ETFs Under the Microscope:
a:http://media.morningstar.com/eu/ETF/assets/SyntheticETFsUnderTheMicroscope_AGlobalStudy_Morningstar.pdf (20.03.2017)
b: http://www.morningstar.co.uk/uk/etfs/etfsolutions.aspx?docid=324200 (01.05.2017)

Morningstar:
http://www.morningstar.fi/fi/glossary/101174/ucits-direktiivi.aspx (03.03.2017)
Table 2 (15.03.2017):
http://www.morningstar.fi/IntroPage.aspx?site=fi&backurl=http%3A%2F%2
http://www.morningstar.fi/fi/funds/snapshot/snapshot.aspx?id=F0GBR04OC0
http://www.morningstar.fi/fi/etf/snapshot/snapshot.aspx?id=0P0000HSFM
http://www.morningstar.fi/fi/funds/snapshot/snapshot.aspx?id=F0GBR06SLU
http://www.morningstar.fi/fi/etf/snapshot/snapshot.aspx?id=0P0000UVYF
http://www.morningstar.fi/fi/funds/snapshot/snapshot.aspx?id=F0GBR04AYQ
http://www.morningstar.fr/fr/funds/snapshot/snapshot.aspx?id=F0GBR04QIZ
http://www.morningstar.fi/fi/funds/snapshot/snapshot.aspx?id=F0GBR04AXJ
http://www.morningstar.fi/fi/etf/snapshot/snapshot.aspx?id=0P0000I5A7
http://www.morningstar.fi/fi/funds/snapshot/snapshot.aspx?id=F0GBR04TV1
http://www.morningstar.fi/fi/etf/snapshot/snapshot.aspx?id=0P0000UVYJ
http://www.morningstar.fi/fi/funds/snapshot/snapshot.aspx?id=F0GBR04OGU
http://www.morningstar.fi/fi/etf/snapshot/snapshot.aspx?id=0P0000NIF1
http://www.morningstar.co.uk/uk/funds/snapshot/snapshot.aspx?id=F0GBR04BRT
http://www.morningstar.fi/fi/etf/snapshot/snapshot.aspx?id=0P0000NNSB
http://www.morningstar.co.uk/uk/funds/snapshot/snapshot.aspx?id=F000001ATZ
http://www.morningstar.fi/fi/etf/snapshot/snapshot.aspx?id=0P0000M815
http://www.morningstar.fi/fi/funds/snapshot/snapshot.aspx?id=F000002O8D

Myllyoja, N., (2015), Nordnet AB, blogpost:
https://www.nordnetblogi.fi/mittaa-tuoton-suhdetta-riskiin-ennen-kuin-itseesi/14/06/2015/ (24.04.2017)

Newlands, C. and Marriage, M. (2016) Financial Times: 99% of actively managed US equity funds underperform:
https://www.ft.com/content/e139d940-977d-11e6-a1dc-bdf38d484582 (20.04.2017)

Nordnet AB:
https://www.nordnet.fi/palvelut-ja-tuotteet/sijoitukset/etf.html (10.04.2017)

Pesonen, M. (2015) Sijoituspokkari – Säästäjästä sijoittajaksi

Puttonen, V. and Repo, E. (2011) Miten sijoitan rahastoihin, 2011

Salkunrakentaja (2012)

http://www.salkunrakentaja.fi/2012/08/etf-rahastojen-rakenteelliset-erot-synteettiset-ja-fyysiset-etft/ (02.03.2017)

Sp-Rahastoyhtiö:
http://www.sp-rahastoyhtio.fi/videot-ja-tyokalut/sanasto/ (03.05.2017)

Sijoitusrahastot:
http://sijoitusrahastot.org/rahastot-sijoitusrahasto-opas/rahastojen-riskit/ (20.02.2017)

Yahoo finance:
http://finance.yahoo.com/news/top-10-risks-etfs-091700639.html (20.02.2017)

Zaidi, B. (2016), The Economic Times: Best balanced funds to invest in for medium-term financial goals:
http://economictimes.indiatimes.com/wealth/invest/best-balanced-funds-to-invest-in-for-medium-term-financial-goals/articleshow/53808181.cms (20.04.2017)