

TALLINN UNIVERSITY OF TECHNOLOGY

School of Business and Governance

Department of Economics and Finance

Alan Alfat

**FINNISH STOCK FUND PERFORMANCE COMPARISON FOR
YEARS 2014 – 2017**

Bachelor's thesis

International Business Administration, Finance and Accounting

Supervisor: Karin Jõeveer, Associate Professor

Tallinn 2018

I declare that I have compiled the paper independently
and all works, important standpoints and data by other authors
have been properly referenced and the same paper
has not previously been presented for grading.
The document length is 7337 words from the introduction to the end of conclusion.

Alan Alfat

(signature, date)

Student code: 158676TVTB

Student e-mail address: aalfat@gmail.com

Supervisor: Karin Jõeveer, Associate Professor:

The paper conforms to requirements in force

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ABSTRACT

In this dissertation author compares chosen mutual funds from the three largest banking institutions in Finland, funds being Danske Suomi Osake K, OP-Suomi A and Nordea Suomi K offered by Danske Bank Finland, OP Financial Group and Nordea Finland Group respectively. Using aforementioned funds author tries to answer three quantitative research problems, first "Which banking group offers best-managed stock fund operating in Finnish economy?", second "Is the published information available for public comparable with authors own calculations?" and lastly "If the chosen mutual funds were closet index funds?". To answer those question author uses the following profit and risk measurement tools, the rate of return, standard deviation, beta coefficient, Sharpe ratio, Treynor ratio, tracking error and R-squared. Results showed that OP-Suomi A was the clear winner for the first question, performing the best in almost all aspects. For the second one, the result showed that rate of return and the standard deviation was not identical with the ones provided by the banks but still comparable, while Sharpe and Treynor ratio differed by a considerable margin. And the last question results indicated that all of the chosen mutual funds had a tracking error of around 3-5% tracking error with the exception of the year 2014 where Danske Suomi Osake K and OP-Suomi A had a tracking error of 2.78% and 2.55% respectively. Taking into consideration how small Finnish stock market is, these values do indicate that they are not closet index funds.

Keywords: Finnish, stock, mutual fund, comparison

INTRODUCTION

In this thesis, the author will be digging into the mutual fund scene in Finland and make a comparison of chosen funds to evaluate their performances. The focus will be on which of the three biggest banking groups in Finland offer the best stock managed mutual funds. And to be more precise which of them provide best managed mutual funds that operate mainly in Finnish economy. And other criteria for the mutual funds are that they have to be actively managed stock funds.

According to a study done by Finance Finland, around 80% of investors find their information in regards of mutual funds right from the provider, their bank or the investment firm, while 67% said that this was a source of information was the most important in their own opinion. As the popularity of the funds is on the rise, with the exception of the period of global financial crisis in 2008, finding the best-managed funds yourself instead of relying on the information given in banks own sites is crucial to be above the average investor. (Finanssialan keskusliitto 2015. Sijoitusrahastotutkimus 2015, 11.)

Instead of relying only on the information available by the banks in this thesis the author will calculate the returns and the statistical risk measurements to find out which of the three largest bank groups in Finland, OP Financial group, Nordea Finland Group and Danske Bank Finland, offer the best available stock mutual fund. Set self-criteria of being actively managed fund is set because outperforming benchmarked index usually requires the fund to be actively managed.

Finding out the best-performed fund will be done by the performance of the fund which will be judged based on the results of measurements of risk and profit. The raw data used for in this dissertation is straight from the mutual funds own website, but unfortunately, the raw data available for use was from mid-2013 to 2018, which lead to shortening the inspection period for four years only, 2014 to 2017 as a full, accurate and reliable comparison cannot be made for years 2013 and 2018. Meaning the focus of performance will be based on short-term results, on which conclusions can be made.

Due to the data available, no long-term conclusions can be made so the focus will be on the recent performances and their evaluations. Measurements used in this thesis will be measurement of profit, rate of return, and measurements of risk, volatility of the fund which is calculated using standard deviation, beta coefficient to compare the fund to the market as a whole, Sharpe ratio to find out if the added risk was worth it and Treynor ratio to evaluate the added risk in regards to the market as a whole.

Raw data of the mutual funds were gathered from banks own site, but unfortunately the data for one of the mutual funds were not available from their own website. To overcome this, the author downloaded the data from the other two mutual funds and then cross-checked with the data from Eikon to check for authenticity. Both data matched so used the data available from Eikon for the third mutual fund. Raw data of the benchmarked index was downloaded from Finance Yahoo.

This dissertation starts with a quick overview of mutual funds over the years. It gives insight into the mutual funds in Finland and how their popularity increased over the years. With a quick look into what type of a person invest into mutual funds and their main reasons for it.

Then introducing the funds chosen for performance comparison along with the benchmarked index. Introducing the benchmarked index that all of them share. With basic info such as the fund manager, year of being founded and even largest stocks held by each stock.

Next is a quick comparison of the stocks and sectors after noticing the similarities of the largest stock held and largest sectors invested in. And also comparing the expenses of each mutual fund and with a quick explanation of what those expenses entail.

After which a quick introduction of methods used to evaluate the performance of the chosen funds. Statistical measurement tools used to compare were selected on the basis of them being relevant for the dissertation. Description of the risk/profit measurements and formulas.

And lastly presenting calculations done on the chosen profit/risk measurements. Giving conclusion based on the calculations for the inspection period. And in the end conclusion of all the calculations done and comparing the mutual funds.

1. MUTUAL FUNDS

Before stepping into the mutual fund comparison, the author will dig into mutual fund scene in Finland and its growth through the research done by Finance Finland regarding mutual funds. The mutual funds selected for comparisons are from the three biggest banking groups, OP Financial Group, Nordea Finland Group and Danske Bank Finland.

1.1. Overview of mutual fund scene

Next, we will look at the study of mutual fund investments in Finland available from Finance Finland (Finanssialan keskusliitto). The primary purpose of this study is to understand the mutual fund scene in Finland. Order for this study was done by Finance Finland, and the research was conducted by IROResearch Oy. The prior research was done in 2010, making this the newest one available. (Finanssialan keskusliitto 2015, 2.)

Mutual fund regulations were first introduced in fall of 1987 but investing into mutual funds started gaining popularity around the year 2000 after the Finnish economic depression that was considered to be one of the worst that Finnish economy has experienced, which happened around the year 1990 – 1993. In figure 1 below, we can see the steady growth of mutual fund invested in Finnish mutual fund market. Finnish mutual funds suffered a significant hit in 2008 which was the direct result of the financial crisis of 2008 which is also known as the global financial crisis. It was not until 2012 that the mutual fund market recovered and started its steady rise again. (Finanssialan keskusliitto 2015, 3.)

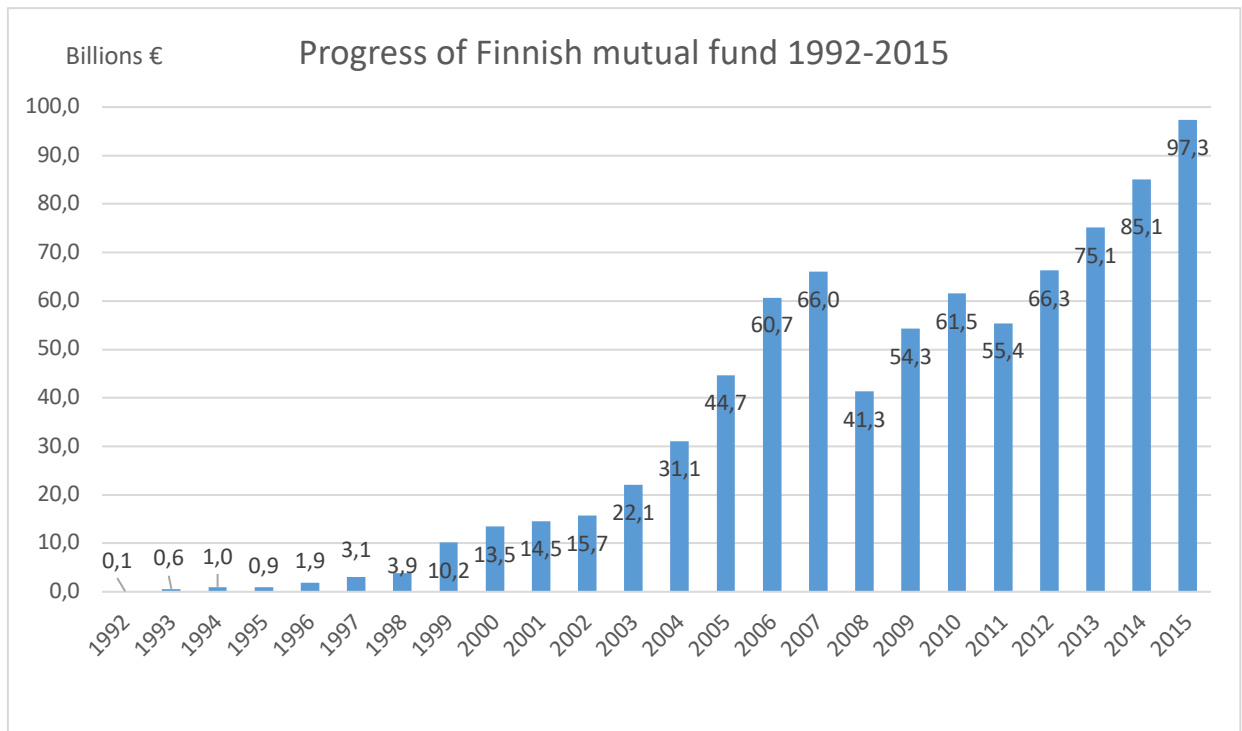


Figure 1. Progress of Finnish mutual fund from years 1992 – 2015

Source: Finanssialan keskusliitto 2015, 3.

Majority of the mutual funds were stock mutual funds (37.2%), then followed by long-term bond funds (31.1%), balanced mutual funds (15.0 %), short-term bond funds (14.6%), other mutual funds (2%). (Finanssialan keskusliitto 2015, 4.)

Finnish households owned around 18.7% (18.4 billion) of 2015 mutual fund capital. Rest is owned by corporates and other organizations. Taking into account insurances that are generally calculated to be a possession of the insurance company, households would own 40.6% (40.0 billion €). These mutual funds are offered by 51 mutual fund investment companies that are registered in Finland of which 21 are members of Finance Finland (Finanssialan keskusliitto), all together they had 457 available mutual funds at the end of 2015. (Finanssialan keskusliitto 201, 4.)

According to IROResearch Oy questionnaire which was answered by 2 000 Finnish people, all of them were over 18 years old, 31% of them were mutual funds investors. They did not take into account investments to life insurances, pension funds nor mutual funds that are directed for beginners. Compared to the previous study in 2010 this had increased from 25% by 6 %. Another thing they did was profiled those who owned mutual funds and found out they were mainly men

who were over 65 years old who lived near in or near the capital and had graduated from a university and their annual income was over 50 000 €. They also found that 56% were active mutual fund investors and 38 % made single sum investments. They found out that women were more active mutual fund investors compared to men and they fell into age gap of 34 – 44 years old. Most of them owned balanced mutual funds (66%) followed by, Stock funds (38%), long-term bond funds (16%), short-term bond funds (8%) and real estate funds (5%). Balanced mutual funds have considerably risen in popularity compared to 2010 when the last study was made. (Finanssialan keskusliitto 2015, 1-4.)

When asked for the reason for investing in mutual funds, multiple answers were accepted, majority answered that it was for rainy day (55%), another 47% were aiming to earn a profit, 33% were saving for retirement and 25% were pre-preparing for future large purchases (cars, home and so on). (Finanssialan keskusliitto 2015, 7.)

When asked for a reason as for why they were investing in mutual funds, the answers were quite simple. 50% said because that the process of selling the fund for liquid cash is quite easy. 44% thought that mutual funds were well diversified. 43% said the profit gained regards to risk was worth the investment. 17% were investing because of the excellent reputation of the investment firm. 12% had researched the past progress of the mutual funds and were satisfied with it. While 12% had taken into account the expenses and thought they were reasonable. (Finanssialan keskusliitto 2015, 11.)

1.2. Introduction of chosen mutual funds

The mutual fund's essential function is building a portfolio which is comprised of stocks, bonds or other securities. Which is owned by the investors of the mutual fund with each unit of fund owned holding equal rights of the fund. It enables people with smaller capital to build more substantial portfolio without needing the required capital to do so on their own and through mutual funds you possibly can invest into securities that you normally would not be able to. Basically taking advantage of the masses and professional knowledge of the fund manager. The fund is not owned by the fund manager or investment firm, and it is the property of the investors who have invested into the fund. Financial Supervisory Authority demands investment firms to state clearly their aim and investment politics regarding mutual funds, which securities they invest to, geological

location, do they distribute dividends or are they focused on growth and invest it further in, and so on. All of those can be found in their key investor information document and much more (Puttonen 2011, 30-31.). Key investor information document is regulated by Financial Supervisory Authority to give key information to investors regarding the mutual fund, and it is not an object of marketing (Finanssivalvonta).

A passive mutual fund is an index fund that closely follows specific index as closely as possible, not to be confused with the fund manager being lazy hence why it is passively managed. An index fund will not aim to outperform the market instead it will try to follow it as closely as possible. Even though this is the case, they cannot follow returns as they do still charge ongoing fees for managing the fund. As it does not have a strategy other than following the market, change of fund manager should not affect the fund in any way. While active funds usually aim to outperform their benchmarked index by carefully investing into companies that are either undervalued, if a particular sector might experience growth or a company whose potential for growth is better than others. Since active mutual fund needs more active management style, expenses will also be higher. Then there is a closet index funds, funds that claim to be actively managed but still perform as good as index fund but having higher expenses since it is classified as an active fund. As chosen funds are classified as active funds, it is essential to find out if they are closet index fund, to do so the author implements tracking error and R-squared, more about them in chapter two and three. (Pesonen, M. (2011), 123-124.; Blake, D. (2000), 512.)

Chosen mutual funds are stock mutual funds, and can be even further categorized into categories, for example, based on the geographical location of the stocks, based on sectors or even the size of the stocks invested into, in this case the mutual funds focus on a geographical location, Finnish market. As they are equity funds investment period is recommended to be long term instead of short term. The chosen mutual funds are three mutual funds from the three biggest banking groups that operate in Finland. All three of them are focused on Finnish market stocks. And all three of them are focused on growth meaning dividends received will be further invested. They are also actively managed funds meaning the investor does not necessarily need to keep a keen eye on the market. Structure of the fund portfolio is similar. All of them use the same risk grading of 1 to 7, 7 being the riskiest and usually most profitable too. All of them are also naturally benchmarked to the same NASDAQ OMX Helsinki Cap (OMXHCPGI) index, which is the widely used index in Finland for benchmarking stock portfolios.

Danske Suomi Osake K is a stock mutual fund from Danske Bank Finland bank group. It was founded in 1987. Their aim is focused for the long term and are even recommending to keep the fund for a period of over five years. Danske Suomi Osake K is mainly comprised of stocks that are located in Finland or stocks that are heavily dependent on Finnish economy. Even then it is heavily weighted on Finnish stocks. They target this fund for an investor who is looking for a considerable profit but understands that it can have a significant decrease in value also. The fund is managed by Juha Laakso M.Sc. in finance with CIIA Diploma who has a work experience of 12 years. Danske themselves have a risk grading of 1 to 7, 7 being the riskiest grade and naturally can expect the highest profit. Danske Suomi Osake K is graded as 6. Morningstar overall rating on this mutual fund is three stars and three stars for sustainability rating also which is the set average for its industry sector. Sustainability rating which depicts how the investment is meeting sustainability challenges such as environmental, social and governance (ESG). In table 1 is listed ten largest stock held by the fund as of March. Of which the five biggest sectors invested in are industrials with 27.5%, basic materials 20.2%, technology 13.9%, financial services 13.4% and utilities with 7.3%. (Danske Invest; Morningstar; Ammann et al.)

OP-Suomi A is a mutual fund offered by Finland biggest banking group OP Financial Group. It was founded in 1994. Their aim is to gain profit investing in domestic stocks meaning the majority of their stocks are from Finnish market. Investment is diversified into 30 – 50 Finnish companies where they see the best profit potential. They boast of having strong knowledge in the sectors they invest. Investment targets are attractive in the sense of them being affordable, using their words structure of the company is built to win, and they are more likely to pay dividends. And this fund is not recommended if you are planning on holding it for less than seven years. They themselves have graded this mutual fund on risk as a 6. And of the three mutual funds operating in Finnish economy, OP-Suomi A is best at meeting the environmental, social and governance challenges with the sustainability rating of 5 globes from Morningstar, clearly above average. And the Morningstar rating for the whole period of operation is four stars. OP-Suomi A is managed by Teemu Salonen, and he started on this fund from the beginning of 2013. The five biggest sectors that are currently invested in are as following 23.05 % in industrials, 20.24 % in basic materials, 14.46 % in technology, 13.67 % in financial services and 11.38 % in consumer cyclical. The ten largest stocks held are listed in table 1 as of March. (OP Bank; Morningstar)

Nordea Suomi K like the previous ones naturally aims to gain growth for the invested sum. Only 5 percentage point can be invested into stocks outside of Finland but inside of Europe. The recommended period for holding this mutual fund is over five years. This fund is also rated 6 on risk grading, just like previous funds it is riskier than average fund, but this naturally means it was potential to be more profitable also. Nordea Suomi K was founded in 1992, and current fund manager Marie Karlsson has been in charge of Nordea Suomi K from the last year 2017. Nordea Suomi K has done poorly with facing environment, social and governance challenges with a two-globe rating on sustainability, well below the average. Morningstar rating on the mutual fund is two stars. In table 1 is listed Nordea Suomi K 10 largest stocks held as of March. Five largest sectors in which stocks are held are industrials with 24.65 %, financial services with 17.07 %, basic materials with 14.55 %, technology with 11.68 % and 10.35 % in consumer cyclical. (Nordea bank, Morningstar)

1.3. Stock, Sector and expenses

Comparing the ten largest stocks held by each of the mutual fund found in table 1, we find that they share a lot of similarities. Starting with the total weight of the ten largest stock held, the weights are 55.02 %, 57.22 % and 53.98 % by OP-Suomi A, Danske Suomi Osake K and Nordea Suomi K respectively. All three of them seem to have invested around the same amount, little over half of the invested sum into their ten largest stocks. And surprisingly 5 of the largest ten stocks are held by all three of the mutual funds. And of those five all three hold Nokia Oyj in high regards, it is one of the largest in each mutual fund even among the ten largest stock held, being largest, second largest and third largest by Danske Suomi Osake K, Nordea Suomi K and OP-Suomi A respectively.

Table 1. 10 largest stock comparisons

Ten largest stock held by each mutual fund (weight of the stock %)			
	OP-Suomi A	Danske Suomi Osake K	Nordea Suomi K
Sampo Oyj A	5.41	8.75	9.28
Nokia Oyj	7.90	10.31	7.41
Wärtsilä Oyj	3.88	3.64	7.25
Huhtamäki Oyj	4.14	4.78	5.78
Kone B		4.40	4.89
Amer Sports			4.66
Fortum		7.1	4.24
UPM-Kymmene	6.25	4.32	4.06
Neste Oil			3.52
Nordea Bank AB	8.01		2.89
Stora Enso Oyj R	8.15	6.36	
Nordea Bank AB FDR (FI) EUR		4.28	
Nokian Tyres Oyj	4.46		
Orion Oyj B	3.50		
Metso Oyj	3.32	3.28	
Total %	55.02	57.22	53.98

Source: Danske Invest; Nordea; OP Bank; Compiled by author

In table 2 we can see that they even share some similarities in the five largest sectors held in the mutual funds. But this is expected due to how similar the ten largest stock held was. From the five largest sectors held by each mutual fund, 4 of them are the same (Industrial, Financial services, Basic materials and Technology). Of those four all of three of the mutual funds have heavily invested in the industrial sector with 27.50%, 23.05% and 24.65% by Danske Suomi Osake K, OP-Suomi A and Nordea Suomi K respectively. Industrial is undoubtedly the most significant sector for all three of the mutual funds.

Table 2. Largest sector comparison

Largest sectors held by each of the mutual funds					
Danske Suomi Osake K		OP-Suomi A		Nordea Suomi K	
Industrials	27.50%	Industrials	23.05%	Industrials	24.65%
Financial services	13.40%	Financial services	13.67%	Financial services	17.07%
Basic materials	20.20%	Basic Materials	20.24%	Basic materials	14.55%
Technology	13.40%	Technology	14.46 %	Technology	11.68%
Total	74.50%		71.42%		67.95%
Utilities	7.30%	Consumer Cyclical	11.38%	Consumer Cyclical	10.35%
Total	81.80%		82.80%		78.30%

Source: Danske Invest; Nordea; OP Bank; Compiled by author

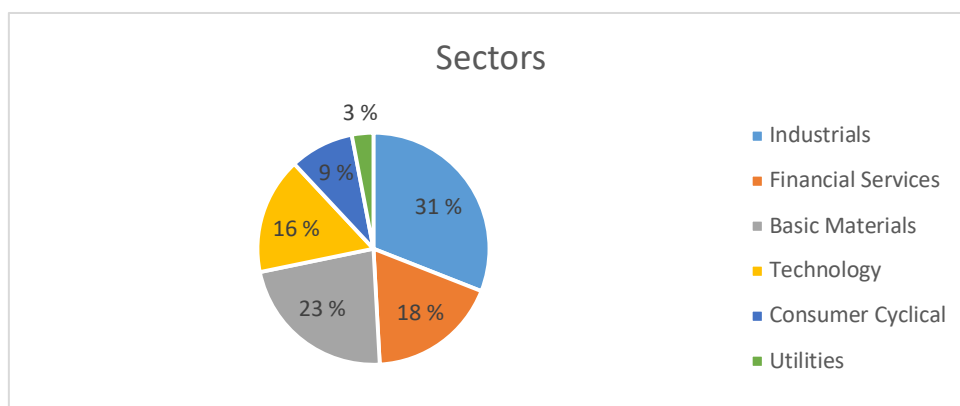


Figure 2. Danske Invest; Nordea; OP Bank; Compiled by author

Mutual fund expenses can be categorized into two categories, expense incurred from the consumers and expenses incurred from the fund. In table 3 below, we can see that similarities are shared between the expenses too. Most expensive mutual fund to manage is Danske Suomi Osake K with ongoing charges of 1.9% which entirely consist of the management fee which is that 1.9%. The management fee is comprised of the expenses occurred during the management of the fund including analysis done for the investments, potential marketing of the fund, reports and so on, mainly it includes expenses incurred by the fund. The ongoing charges are all of the charges incurred by the mutual fund with the exception of the subscription fee and redemption fee, and

this was previously known as the total expense ratio (TER). And from the table without any need for calculations, you can determine that for an extended period Nordea Suomi K fund will be cheapest one to hold expense wise even though OP-Suomi A does not charge for the subscription. (Pörssisäätiö, Sijoitus rahasto opas 13 - 14.)

Table 3. Fund expense comparison

Mutual Fund Expenses				
	Subscription fee	Redemption fee	Management fee per year	Ongoing charges per year
Danske Suomi Osake K	1% (Min 8 €)	1% (Min 8 €)	1.9%	1.9%
OP-Suomi A	0%	1%	1.6%	1.6%
Nordea Suomi K	1%	1%	1.4%	1.41%

Source: Danske Invest; Nordea; OP Bank; Compiled by author

Other expenses that are indirect are taxes from the profit of the fund. Taxes incurred from the profit are investment income or unearned income. The tax rate is 30% of the profit up to 30 000 € and over 30 000 € it is 34%. Another incurred tax that is quite common is the gift tax. You can gift funds or other assets up to 5 000 € for a period of three years after which gift tax must be paid which is 8 to 17% for close family and 19 to 33 % for rest. (Vero; Pörssisäätiö, Rahoituksen sijoitus opas 23.)

2. DATA AND METHODOLOGY

Because only two out of the three mutual funds chosen had their raw data available for the public other sources had to be used. The data offered by those two mutual funds was compared with Eikon database to make sure of their that they did not have different results. After which the data for the third fund was acquired. Finance Yahoo provided the raw data for the benchmarked index. And lastly, 3-month Euribor was used as the risk-free rate for calculations. Earlier studies have been made regarding same topic but due to different mutual funds being used and for different periods and even in different geographical locations, no comparisons will be made with other studies.

Differentiating profit and risk from the mutual fund is not really a necessary as both of them, risk and profit, usually mean precisely the same thing. Meaning if you aim for higher profit you should be willing to take more significant risks to achieve it. When calculating profit or risk of a mutual fund a few different key ratios come really handy. As diversification of a mutual fund is already done by the fund manager, you can determine that the risk of the fund should usually be lower than a stock portfolio. (Butler, J. 2014, 85.; Pörssisäätiö, Sijoitus rahasto opas 15 - 16.)

2.1. Statistical measurement tools

Return of the fund is one of the essential figures used in judging a mutual fund. With it, you can calculate the performance of the fund with the downside of not taking into account the risk taken to accomplish those said returns, and it does not in any way tell you of what is to come and what can be expected. Return of the fund will be used to see performances of the mutual fund and also it will be a helping tool calculating the risk ratios (Puttonen & Repo 2011, 82.)

Volatility is the uncertainty that is attached to the asset. It measures the changes in the value of the assets over a specified period. This can be calculated and then released in an annualized format, for example, a 1-year period standard deviation is annualized by multiplying it with the square root of 12 when using monthly data. The higher the volatility is, the higher the uncertainty related to the value of the asset will be. Naturally, low volatility means you can expect small changes in the value while high asset with high volatility will mean the changes in its value will be much

higher. This can be considered to be one of the essential tools for any investor. (Puttonen & Repo 2011, 86.; Sijoitustieto 2015)

Beta coefficient or just beta in short is a measurement of systematic risk or market risk of the asset. It is a tool of measurement which measures the changes in asset value in comparison to market value. The ratio shows the potential change of the asset in comparison to the market as a whole. The beta of the market is 1, and if the beta of an asset is 1.20 it tells you that in the upward sloping market your asset value will increase approximately 20% and vice versa, while in the downward sloping market it will decrease by approximately 20%. (Porssisaatio; Ang, C., S. 2015, 169.)

Tracking error is another measurement of risk that indicates the difference of the fund in comparison to the index that it is benchmarked against. Tracking error is also known as the active risk of the fund which is derived from the standard deviation of the difference of returns between the fund and its benchmarked index. And as it is monthly data, it is annualized by multiplying it with the square root of 12. Having a significant percentage point of tracking error means how much returns of the fund differs from index returns. Actively managed stock fund can achieve tracking error of 5 to 10 %. This can be achieved for example by weighting the sectors differently than the index. (Ang, C., S. 2015, 205.; Pörssisäätiö, Rahoituksen sijoitus opas 22.)

While tracking error measures the difference in movement when compared to the index, R-squared measures how closely the fund follows movements of the index. The high R-squared value indicates that the movement of the fund can be explained by the movement of the benchmarked index. (Morningstar; New york times. 1999)

2.2. Risk-adjusted return

Sharpe ratio was designed by William Sharpen in 1966, with it you can measure a mutual funds risk and profit with the volatility of the fund. Naturally, when holding a riskier asset in the mutual fund, you expect it to receive a higher return, otherwise what would be the point since you could invest in a risk-free asset and enjoy the same return. With the ratio, you can calculate the additional return you receive for the excess risk taken.

Sharpe ratio formula: $s = (r_i - r_f) / \sigma_i$

Where s being the value of Sharpe ratio, r_i is comprised of the annual average rate of return for the mutual fund, and r_f is the annual average rate of return for a risk-free rate which in this case will be 3-month Euribor rate. σ_i is the average volatility of the asset held. Value of Sharpe ratio can be positive and negative. The higher the rate is, the better the profit is for the taken risk. While if the value of the ratio is negative, you can assume that the risk-free asset will be better. The popularity of the Sharpe ratio comes from the simplicity of it. (Sharpe, 1994)

Next ratio that is also essential in this research is the Treynor ratio also known as Treynor index or reward to volatility ratio. Treynor ratio was developed by Jack Treynor, hence the ratio was named after him. This ratio is almost identical to Sharpe ratio, but instead of using the average volatility of the asset held, it uses the beta, market risk, of the asset held which is the systematic risk of the asset in comparison to the market. A high value in this ratio indicates good performance. Treynor ratio tries to calculate the performance of the investment for given risk of the asset held. Naturally, this ratio revolves around the beta of the asset to measure. Meaning that the risk of the whole market, beta coefficient, must be taken into account as it cannot be removed through diversification. (Sharpe, 1966)

Treynor ratio formula: $t_i = (r_i - r_f) / \beta_i$

Where t_i indicates Treynor ratio, r_i is annualized return of the asset, r_f annual return of the risk-free rate (3-month Euribor) and β_i represents the systematic risk of the asset, beta coefficient. (Sharpe, 1966)

3. FINDINGS

3.1. Results

Comparing the returns of each mutual fund for the past ten years, we can start seeing the difference in performance despite the somewhat of the similarities shared. For this we will be using the data provided by each of the banks own key investor information document, because the data available to me was only from mid-2013 to date. Moving on to table 4 we can clearly witness the effect of the global financial crisis just by looking at the performance of 2008, seeing how all of the funds had a significant decrease in returns, experiencing their lowest return rate in the 10 year inspection period, with only OP-Suomi A outperforming the index with quite a nice margin, Danske Suomi Osake K also outperformed the index but with a small margin. The economy suffered yet another hit in 2011 with the tsunami in Japan and the debt crisis in Europe, this time Danske Suomi Osake K being the only one to beat the index even though with a slight margin only. With first glance at the table, you can determine that OP-Suomi A has performed best in these last ten years. Having outperformed the other two six times of which five times are outdoing the OMX Helsinki Cap index. Even though in 2009 it did worse out of the three mutual funds, it still had return exceeding the index. Even though in the long term you will save from expense by investing in Nordea Suomi K but on performance wise it has done worst. Nordea Suomi K has underperformed the index eight times during the ten years inspection period. While OP-Suomi A and Danske Suomi Osake K have underperformed the index 4 and five times respectively.

Table 4. The rate of return of the funds

Return for the past ten years				
	OMX Helsinki Cap	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	11.5%	6.4%	5.3%	7.8%
2016	13.3%	7.9%	18.4%	9.6%
2015	15.9%	15.9%	16.5%	13.0%
2014	10.6%	5.2%	9.2%	4.8%
2013	31.6%	27.8%	35.0%	29.0%
2012	15.5%	19.3%	13.3%	15.7%
2011	-24.9%	-24.2%	-27.3%	-29.0%
2010	29.8%	27.2%	30.4%	29.0%
2009	44.5%	47.6%	45.0%	53.3%
2008	-47.3%	-47.1%	-40.5%	-49.9%

Source: Danske Invest; Nordea; OP Bank; Compiled by author

The data that will be used for further calculations are rounded up numbers to two decimals in the following (see table 5). Following data differs a little bit from given data from each of the mutual funds' key investor information document. In table 5 return of fund was calculated on a monthly basis for years 2014 to 2017, which is the data that was available to me to use. For further calculations, I will be using data in their exact value and not the rounded up values seen in table 5.

Table 5. The calculated rate of return

The calculated rate of return				
	OMX Helsinki Cap	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	11.54%	6.34%	5.34%	7.79%
2016	13.28%	7.45%	18.36%	9.64%
2015	15.92%	16.05%	16.55%	12.26%
2014	10.58%	4.94%	9.24%	6.70%

Source: Thomson Reuters Eikon Database; Compiled based on author's calculations

Standard deviation found in table 6 was calculated using Net Asset Value (NAV) of the closing price. Data were downloaded from each of the banks own www site with the exception of OP bank where the data was downloaded from Eikon database. Index database was downloaded from Finance Yahoo database. The standard deviation was calculated using monthly data and then annualized. The annualized standard deviation can be found for years 2014 to 2017. OP-Suomi A had the highest standard deviation with 20.24% in 2015, but the others weren't too far with 19.05%, 18.07% and 19.47% by OMX Helsinki Cap index, Danske Suomi Osake K and Nordea Suomi K respectively. On the other hand, Nordea Suomi K enjoyed the lowest volatility in 2017 with a standard deviation of 7.60% and once again others weren't too far apart with 8.44%, 8.26% and 9.44% by the benchmarked index, Danske Suomi Osake K and OP-Suomi A respectively.

Table 6. Annualized standard deviation

Annualized standard deviation for years 2014 - 2017				
	OMX Helsinki Cap	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	8.44%	8.26%	9.44%	7.60%
2016	11.08%	10.99%	10.42%	11.75%
2015	19.05%	18.07%	20.24%	19.47%
2014	9.99%	10.97%	10.40%	9.88%

Source: Thomson Reuters Eikon Database; Compiled based on author's calculations

OMX Helsinki Cap Yield index represents the market, and each fund is compared to the market to find out the beta coefficient or just beta in short. All three of them are as volatile as the market. This is no surprise considering the result of the previously measured risks. In 2017 Nordea Suomi K was the least volatile with a beta of 0.84 but had the highest return (7.79%) out of the three, but lower than the index (11.54%). This outcome can be a result of well-managed fund strategies and risk adjustments. Same can be said about the performance of OP-Suomi A in 2016 with a beta of 0.85, but still managed to outperform the index with a return of 18.36% while index had a return of 13.28%. Lower beta does not equal lower return which is seen in the aforementioned example. (See table 7)

Table 7. Calculated beta

The beta for years 2014 - 2017			
	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	0.89	0.93	0.74
2016	0.93	0.85	1.04
2015	0.94	1.05	0.99
2014	1.07	1.01	0.84

Source: Thomson Reuters Eikon Database; Compiled based on author's calculations

Calculating tracking error by taking the standard deviation of the differences from rate or return of the fund and the index. In this case standard deviation of the difference between the monthly data of the fund index and then annualizing it. For actively managed stock fund and especially for a fund that wishes to outperform benchmarked index you should be expecting a relatively high tracking error. Low tracking error for actively managed stock fund might lead mean that the fund is actually closet index fund. From the table 8, we can see that all of the mutual bonds have a decent tracking error taking into consideration how small the Finnish stock market really is, with the exception of 2014 values by Danske Suomi Osake K and OP-Suomi A.

Table 8. Calculated tracking error

Tracking error for years 2014 - 2017			
	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	3.41%	3.41%	3.00%
2016	4.44%	5.02%	3.04%
2015	3.62%	3.60%	5.09%
2014	2.78%	2.55%	5.42%

Source: Thomson Reuters Eikon Database; Compiled based on author's calculations

Value of R-squared is represented with values 0 to 1. Higher value means that movement of the mutual funds can be explained by movements of the index. As we saw in aforementioned tracking error we can expect high values. And as shown in table 9 that proves to be true. For actively

managed stock funds which aim to outperform the benchmarked index, these values are quite high. Somewhat higher value is acceptable as these funds operate in Finnish economy, Nasdaq OMX Helsinki which has only 129 stocks listed. Nevertheless in 2015 even with an R-squared of 0.97 by OP-Suomi A fund, they still slightly outperformed the index.

Table 9. Calculated R-Square

R-Squared for 2014 - 2017			
	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	0.81	0.81	0.86
2016	0.84	0.80	0.94
2015	0.97	0.97	0.94
2014	0.94	0.95	0.74

Source: Thomson Reuters Eikon Database; Compiled based on author's calculations

3.2. Risk-adjusted returns

With Sharpe ratio we can determine how well mutual fund return did for the risk taken. With this ratio we can determine if the risk taken was actually profitable. Naturally higher number is better. 3-month Euribor was used as the risk-free rate for the calculations. In table 10 we can see that for the inspection period of 2014 to 2017 none of the funds did worse than the risk-free rate, naturally due to a low risk-free rate of 3-month Euribor this is hard to achieve. For the year 2017 there is a clear difference between the funds. Nordea Suomi K fund not only had the highest return for that year it had highest Sharpe ratio, return for risk taken was best. Highest Sharpe ratio for the inspection period of 2014 to 2017 was achieved by OP-Suomi A with 1.78 in 2016. It outperformed the index by a large margin and outperformed other two funds by an even more considerable margin. Danske Suomi Osake K fund performed the worst for the inspection period and achieved the lowest Sharpe ratio in the table, a 0.34 Sharpe ratio in 2014.

Table 10. Calculated Sharpe ratio

Sharpe ratio for years 2014 to 2017			
	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	0.89	0.73	1.34
2016	0.70	1.78	0.83
2015	0.85	0.79	0.61
2014	0.30	0.72	0.52

Source: Thomson Reuters Eikon Database; Compiled based on author's calculations

Table 11 depicts calculated Treynor ratio for given period of 2014 – 2017. Just like Sharpe ratio, Treynor ratio measures how much-added risk actually contributes to the return, but unlike Sharpe ratio which uses standard deviation Treynor ratio uses beta, with respect to the market which is the benchmarked index. Highest rated value can be found in 2016 by OP-Suomi A with a value of 0.219 which is clearly double of the other two funds ratio. And just like in Sharpe ratio Danske Suomi Osake K performed worst in regards of added risk for the whole inspection period with even having the lowest value which can be found in 2014 with a value of 0.033.

Table 11. Calculated Treynor ratio

Treynor ratio for years 2014 to 2017			
	Danske Suomi Osake K	OP-Suomi A	Nordea Suomi K
2017	0.075	0.061	0.109
2016	0.083	0.219	0.095
2015	0.171	0.157	0.123
2014	0.033	0.077	0.063

Source: Thomson Reuters Eikon Database; Compiled based on author's calculations

3.3. End results, limitations and self-assessment

In table 12 is a recap of the statistical measurements in which a better performance can be judged. First, second and third column under each measurement category represents Danske Suomi Osake K, OP-Suomi A and Nordea Suomi K respectively. Winner of each year by category will be represented by lower case “x”.

Table 12. Ratios complied

The conclusion of calculations for years 2014 to 2017												
	Danske Suomi Osake K			OP-Suomi A			Nordea Suomi K					
	Rate of return			Standard Deviation			Sharpe ratio			Treynor ratio		
2017			X			X			X			X
2016		X			X			X			X	
2015		X		X			X			X		
2014		X				X		X			X	

Source: Thomson Reuters Eikon Database; Compiled based on author’s calculations

The limitations of this dissertation is the short inspection period, author chose inspection period of 2014 – 2017 due to the fact that is the raw data that was available for the public to use from the mutual funds own website. Dissertation could have been improved by not only increasing the length of the inspection period but by also including several other funds operating in different categories. Several other statistical measurement tools could have also been used such as Jensen alpha. Fama-french three-factor model was not used due to authors lack of knowledge regarding it. All in all, there is room for improvement.

CONCLUSION

According to the research available from Finance Finland, a huge majority (80%) of mutual fund investor receive their information regarding the mutual funds they have invested into straight from the bank that is offering it. And out of that 67% find that information to be the most important source of information and do not necessarily look further into it and are satisfied with it.

In 2016 the 12 largest Finnish banking groups and amalgamation, which were comprised of 274 credit institutions, the three largest ones were OP Financial Group, Nordea Finland Group and Danske Bank Finland, they are largest, second largest and third largest respectively. Of which OP Financial Group and Danske Bank Finland are under direct supervision of European Central Bank, while Nordea Finland is for the time being under the direct supervision of Swedish Financial Supervisory authority. Rest of the credit institutions that were not mentioned fall into direct supervision of Finnish Financial Supervision Authority.

Mutual funds started gaining popularity around the year 2000 even though first mutual fund regulations were introduced in fall of 1987. This can be explained by Finnish depression of 1990-1993.

With the raw data and short inspection period, no long-term conclusions about which fund has performed absolutely the best can be made. But conclusions of short-term performances can be made, and it can also give little insight on the performances that can be expected.

The first question to which was to find out which of the three largest banking groups offered the best-managed stock fund that operates in Finnish economy. Chapter 3 answered this question where results of the calculations were made. OP-Suomi A dominated the whole inspection period with the exception of 2017 where it did worst out of all three mutual funds chosen. Danske Suomi Osake K performed the worst for the whole inspection period of 2014 to 2017.

For the inspection period, we can clearly see that OP-Suomi A dominated the rate of return with the exception of 2017. For that year it had the lowest return out of all three of them. Two out of three years where it had the best return, it overperformed the index with 5.08% and 0.63% in 2016 and 2015 respectively. The third underperformed the index with a margin of 1.33%. Weakest being clearly Danske Suomi Osake K.

The volatility of each of the mutual funds was quite close with having Nordea Suomi K as the winner for the inspection period, but only just. It had the lowest volatile fund in 2017 and 2014, while in 2017 it had the highest return.

Now due to having highest returns for years 2016 to 2014, OP-Suomi A managed to come on top of both Sharpe ratio and Treynor ratio for years 2016 and 2014. Of course, having lowest volatility in 2016 did its part in Sharpe ratio, while in 2014 it only lost to Nordea Suomi K with the difference of 0.74% regarding standard deviation.

Danske Suomi Osake K did not only perform the worst it also had the highest expenses among all three of the mutual funds. With its performance during the inspection period, it would be best to choose between OP-Suomi A and Nordea Suomi K if the expense is a big part of your decision making.

All in all, OP-Suomi A did best for the given inspection period. In 2015 it lost to Danske Suomi Osake K fund in Sharpe ratio and Treynor ratio with a difference of only 0.07 and 0.014 respectively, meaning in 2015 OP-Suomi A did better than Nordea Suomi K.

Second question if the results of the calculated statistical measurement can be compared to the ones given by the mutual fund managers can also be answered with chapter 3 results. And as results showed right from the start that there was a slight difference in the calculated rate of return and the rate of return offered by the banks. This effect then got multiplied when those figures were used in formulas together with other first level values that also had a slight difference. Daily, weekly and monthly form of raw data will have their own effects too but in the end with the exception of risk-free rate used, they are comparable.

The last question was mainly to find out if the chosen mutual funds were actually closet index funds. To find this out we need to find out how much the movement of the chosen mutual funds

differed from the index. And results from chapter 5, tracking error and R-squared, indicated that the difference was quite decent. In 2016 when OP-Suomi A outperformed the index with a difference of 5.08% had a tracking error of 5.02%, and with an R-square value of 0.80.

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