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# Is local market insight a successful strategy for fund managers? a comparative study of Japan funds

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## Abstract

**Background:** Interest for fund investments in Sweden is high with 95% of the Swedish people own shares in some kind of a fund including the Swedish pension system (PPM). The need to evaluate the performances of such funds has therefore increased accordingly. Much research has been done in the area of fund evaluation for the past decades, but there still exists an inconsistency in the opinions of whether or not it is possible to find winning funds that are being able to outperform the market. The focus of this thesis lies on mutual funds with active investments strategies, but with in the Japanese market. When it comes to Japan funds in Sweden there are both Swedish and foreign managed alternatives available. The main part of the foreign managed investors differs from the Swedish managed since they are mostly branch located in Japan.

**Purpose:** The purpose of this thesis is to investigate how important market insight is for successful fund management by observing how strategies and performances differ between Swedish and foreign fund managers that invest in Japan funds. I will evaluate different fund managers to see if there is a winning fund that outperforms the others and try to clear out and come up with possible explanations to the result. If market insight really is a contributing performance factor then it should be natural that the foreign funds have an advantage and therefore performs better.

**Methodology:** In this thesis the hypothetical-deductive approach has been used where general theories work as a base for making conclusions about single observations in the empirical findings. I have utilized different theoretical models, available and often used for this type of fund evaluations, and compared how both Swedish managed as well as foreign managed Japan funds differ in performance.

**Conclusion:** By looking at the overall performance in terms of return the Swedish managed funds have surprisingly managed to highly outperform the foreign ones, even when making risk adjustments. Results after making this fund evaluation therefore fail to confirm that local market insight has any significant role in superior fund performance when it comes to the Japanese market.

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## 1. Introduction

*This chapter will provide a short background description for the thesis. Problem formulation, scope and previous research will be clearly defined and explained.*

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### 1.1 Background

Interest for fund investments in Sweden is high with 95% of the Swedish people own shares in some kind of a fund including the Swedish pension system (PPM). Outside the Swedish pension system the rate is as high as 70% and 30 % of Swedish households' savings are invested in funds. The popularity of mutual funds has increased consequently since the 70's and according to statistics from Fondbolagens förening, there has been an increase in the wealth of mutual funds in Sweden from 300 billion to 1.6 trillion in 2006 (Fondbolagen 2007). In June 2007 the Swedish net savings in mutual funds was 2.5 billion SEK (Fondbolagen, 2007). By definition a mutual fund allows investors to buy and sell shares in the fund portfolio at any time and all investment decisions are being made by the manager of the mutual fund (Zamilian, M, 1997 pp 1).

There is a wide range of different funds to choose between and due to major diversification of investment alternatives and increased popularity of mutual funds, the need to evaluate the performances of such funds has increased accordingly. Much research has been done in the area of fund evaluation, but there still exists an inconsistency in the opinions of whether or not it is possible to find winning funds that are being able to outperform the market (Zamilian, M 1997 pp 2-3).

The focus of this thesis lies on mutual funds with active investments strategies, but with in the Japanese market. In Japan, as in the case of mutual funds in general there are broad investment possibilities with many different funds to invest in, both Swedish and foreign managed. Because of the large extent of fund savings among Swedish people the Swedish market has become very attractive for large foreign fund managers such as Fidelity and Massachusetts Financial Services (MFS). Peter Simmons, chief of MFS International Europe, says that the general knowledge about the financial market and the interest for stocks are better in Sweden than anywhere else.

But international and large fund managers with global market presence have competitive advantages over even the larger Swedish fund managers such as Swedbank's Robur in form of their knowledge, size and capacity (Affärsvärlden 2000 ). Swedish fund managers also have a disadvantage towards their international competitors since they generally manage their funds, due

to cost savings, from offices in Sweden, leaving them without close market insight in the companies they are investing in (Strandberg, J 2007). Many foreign managed funds differ in this matter since they often have branches with fund managers located directly in Japan (Kamp, K 2004 ).

The development of the Japanese stock market has been rather cool during the past years with the exception of 2005, a year characterized by highly positive returns and the MSCI Japan - index increased with 43 % in Japanese yen (JPY) and 49 % in Swedish krona (SEK). However, the Japanese stock market started to fall again in 2006, in line with the general global market decline, but mainly because of a depreciation of the JPY which made many foreign investors passive and hesitant to invest. For the SEK the decrease was as much as 16 % and even if the MSCI Japan-index rose with 6 % in JPY it fell with approximately 13 %, when recalculated in SEK. Jonas Lindmark (2007), analyst and editor at Swedish Morningstar, explains the decrease of the currency as partly connected to the large amount of money flowing out of the country and being invested abroad where the interest rates are considerably higher.

The latter part of 2006 and the beginning of 2007 were on the other hand characterized by increasing export and growth rates but domestic demand was still unexpectedly weak, showing that pessimism among the Japanese people is still a big problem (Lindmark, J 2007). Furthermore, political changes also affected Japan negatively as the former Prime minister, Koizumi, resigned from his position, causing political disturbance and leaving many investors passive. The outcome of this political change is still rather uncertain (Swedbank-Robur 2007). The newly elected Prime minister, Shinzo Abe, has promised the Japanese people sweeping economical reforms, but such promises are far from reality and political pessimists fear that Japan's economy will fall back in to old blockages again. Foreign experts are on the other hand more optimistic, noting Abe has already initiated several reforms after taking on the role as prime minister only a few months ago, a good sign for the future they believe (Lindmark, J 2007).

Jonas Lindmark (2007) at Morningstar believes that Japan will, in the long run experience positive development despite current uncertainties. If the Japanese economy really is on its way up from the deep pessimism and extensive problems present since the early 90's, there is naturally the strong possibility that the stock market in Tokyo will also increase in profitability, growth and value. The JPY is also regarded to be the worlds most under valuated currency and an end to currency speculation could result in dramatic effects that will strengthen both the JPY and

the stock market. Furthermore, positive signs have been coming from Japanese companies in form of better performances, a strong indicator of where the economy is heading. Japanese companies have also started to use takeovers as a way of expanding abroad, something that until now has been quite rare.

The profits and the level of the Japanese stock market are still far from earlier records when compared to other stock markets around the world, indicating that there is room for increases if the optimistic analysis turns out to be right (Lindmark, J 2006).

The opinions of the future outcome of Japan's economy are mixed and there is a larger risk involved with Japan funds since the volatility is rather high due to these uncertainties. Kristina Kamp writes in an article in Dagens Nyheter (2004), that a problem with Swedish fund managers is their lack of insight to the Japanese stock market since they are mainly managed from Stockholm. The alternative Japan funds in the Swedish market are foreign based which often cause inconveniences for the shareowners in form of higher costs and minimum initial purchase levels.

## **1.2 Problem discussion**

The interest of mutual fund evaluations has come to increase highly and research in the area has been done frequently for the past decades. Academic research of the behavior of fund managers and the performance of portfolios started in USA during the 60's and in 1965 Treynor focused his research on superior performance for fund managers. Sharpe developed the often used Capital Asset Price Model (CAPM) in 1964 which provided the foundation for Jensen's measurement of portfolio performance in the end of the 60's. The need of evaluating different funds has increased in tandem with the major upswing in popularity that mutual funds have experienced in many countries. It is not only the number of different fund alternatives and the amount of invested money that have increased, but the range of investment targets has also become much wider. Different risk classes as well as investment items such as stocks, bonds, derivatives and commodities have also been introduced. And mutual funds that invest in specific regions and countries are now regularly incorporated (Zamilian, M 1997 pp 1-3).

The increasing interest for mutual funds has been intense in Sweden for at least the past ten years and especially after 2000 when the PPM system was introduced. The new PPM-system lead to

heavy investments in the capital market since a large amount of people's saved pensions were invested in different funds (Fondbolagen 2007).

Having a branch in the geographical area of an investment is as expected costly since it is recourse taking, but whether or not this extra cost is being compensated through increased fund revenue is a question that has been widely debated in the financial industry. When it comes to Japan funds in Sweden there are both Swedish and foreign managed alternatives available. The main part of the foreign managed investors differs from the Swedish managed since they are mostly branch located in Japan.

According to an article in, Svenska Dagbladet (1999), the best portfolio manager of Japan funds available in Sweden that same year was a Japanese man with close market insight to the Japanese market, having worked in the finance district of Tokyo for 30 years. His managed Japan fund had highly outperformed Swedish competitors located in Stockholm. Other related articles in this area support the theory about geographical market insight as a winning strategy when it comes to increased returns. Jesper Strandberg (2007), journalist at Avanza, agrees that market insight and the possibility of visiting companies are important factors for successive fund management. However, he states that this only holds in developing markets such as China and should not be seen as an advantage when it comes to mature markets like Japan or USA. Furthermore, mature markets have a very high level of transparency and since the information is so well analyzed with correctly set prices the gain of physically being at the market is negligible. He believes it is difficult for one investor to get better information than another.

Consequently, there is no doubt that evaluating the performance of different funds is essential for all investors since it clears up questions and difficulties concerning the investment choices that exist due to large fund diversification. I believe that it is interesting to investigate if there is a gain in investing in foreign based Japan funds despite the inconveniences that can arise, as stated earlier in the text, with higher costs for example.

Due to the ongoing debate concerning the importance of market insight for the performance of mutual funds I aim to evaluate and compare foreign Japan funds that are managed from Japan with Swedish Japan funds that are managed from Sweden to see if any conclusions thereafter can be drawn. If market insight really is a contributing performance factor then it should be natural that the foreign funds have an advantage and therefore performs better. The opportunity of



creating relationships and influence the companies that are included in the portfolio can only be made by fund managers that have their geographical localization in Japan which is not the case for Swedish managed Japan funds. Also, the fact that large international fund managers such as Fidelity and MFS are growing in the Swedish financial market is another aspect that makes this evaluation even more interesting.

An analysis, made by Max Zamilian (1997), of the performance of a large sample of Swedish mutual funds between 1984 and 1992 showed that Swedish portfolio managers to a large extent act alike. They all appeared to be overweighed in small stocks but most of the mutual fund returns still follow the index-portfolio return. Furthermore, many mutual funds also tend to have their largest investments in the same assets, often large and well-known stocks, in order to increase their credibility and thereby attract investors. So, if the majority of Swedish managed mutual funds seem to have this type of flock behavior as a strategy than there is a possibility that the Swedish managed Japan funds that are being evaluated in this thesis show a similar pattern.

The above mentioned portfolio performance measurements, Treynor's index, Sharpe's CAPM-model and Jensen's alpha have all been frequently used in different mutual fund evaluations and will among some other risk and performance measurements also be utilized in this analysis of the performance of Japanese mutual funds.

### **1.3 Scope and objectives**

The scope of this thesis is to investigate if there is a greater pay off for investors choosing a foreign managed Japan fund with local market presence relative to a Swedish managed one. In addition, differences in strategies and performances between Swedish and foreign fund managers will also be investigated. If the foreign located fund managers perform better than the Swedish managed then it will tell us something about how important market insight is. If not, then it may be a fact that a mature market has such a high level of transparency with correctly set prices that the actual physical presences of fund managers are redundant. Other possible explanations to the outcome of this report's evaluation of Japan funds will also be discussed.

## **1.4 Target reader**

Financial economics students with basic knowledge in the portfolio theory area are the target readers for this thesis. I will therefore not explain words and expressions that are fundamental in finance studies. Others with basic financial knowledge and a general interest in the fund evaluating area, especially interest in whether market insight is an important performance factor or not when it comes to Japan funds can also find this report useful.

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## 2. Methodology

*This chapter will present a general explanation to possible methods that are often used in this type of fund evaluations and also motivate the choice of method for this thesis. Mode of procedure and critical aspects of the method including delimitations will also be provided.*

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### 2.1 Choice of method

In social scientific related research two often used approaches are the hypothetical-deductive method and the inductive method. They can also be combined in various ways. These two approaches both describe the relationship between empirical findings and theory in a thesis. The choice of method depends on the thesis' specific problem formula and the strategy that is best suitable for drawing conclusions, based on the relationship between the empirical findings and the theory. In this thesis the hypothetical-deductive approach has been used where general theories work as a base for making conclusions about single observations in the empirical findings (Wallén, G 1996 pp 47-48). I have utilized different theoretical models, available and often used for this type of fund evaluations, and compared how both Swedish managed as well as foreign managed Japan funds differ in performance.

In regards to gathering data there are two available approaches to collecting and explaining data; qualitative and quantitative. The choice of method for collecting data depends on the specifics of the investigation. In the qualitative approach soft data is being used, often in form of interviews where the purpose is to make one's own interpretation of the material. With the quantitative approach the data is in the form of numbers and statistics where calculations are being made in order to make interpretations and thereafter draw conclusions (Wallén G 1996 pp 63). This analysis will be based on the quantitative approach since calculations of fund rates is necessary and mainly works as the foundation for making interpretations of the empirical findings.

### 2.2 Mode of procedure

The model utilized for making a quantitative analysis of the performance of the Japan funds can be described by three variables, non-risk adjusted return, risk and risk adjusted return. Since there is no clear definition of performance it is possible to explain and analyze it in various ways. The problem formula for this thesis is to investigate Swedish and foreign managed Japan funds in order to find out to what degree market localization pays off for the investor. The choice of this

model as an analyzing tool is based on its general frequency in fund evaluations, making it reliable and useful. The first variable is the non risk related return measuring what the investor receives in terms of absolute money, something that investors of a mutual fund mainly focus on. Risk is also interesting when analyzing fund managers since it shows their activeness when managing the portfolios relative to the market index, making a comparison possible. The third variable is the risk adjusted return which can be described as a combination of the first two variables. Looking at risk adjustments are essential in portfolio theory, explaining how well the funds have performed relative to their risk, isolating the skills of the fund managers from luck. Taking on higher risk should naturally compensate the investor through higher pay off in terms of return.

In the process of choosing funds to compare and evaluate Morningstar's fund category system has been used since it facilitates a comparison of mutual funds historical returns adjusted for costs and risk. Morningstar divides mutual funds in to similar categories and after evaluating them they are given a star from one to five. In this case the category Japan Large Cap Equity has been used and Large Cap is defined by equities in the top 70 % of the capitalization of the Japanese market. These mutual funds invest at least 75 % of total assets in equities and invest at least 75 % of equity assets in Japanese equities. The category benchmark that Morningstar uses for this fund category is MSCI Japan NDTR, an index that also has been used for this thesis (Morningstar, 2007).

Subjects for this fund evaluation are mutual funds managed by five of the larger foreign fund managers, all having branches in Japan, and five of the largest Swedish fund managers, located in Sweden. These ten funds are listed under the same category, Japan Large Cap Equity, making them comparable. The chosen foreign funds to evaluate are Credit Suisse's Equity Fund (lux) Japan Megatrend B, Goldman Sachs's Japan portfolio Inc, INVESCO's Nippon select Equity Fund A, Fidelity's Japan Fund A and SGAM's (Société Generale Asset Manager) Fund equities Japan. Swedish managed funds are represented by Nordea Japan, Swedbank-Robur Japan, SEB Japan, Länsförsäkringar Japan and Folksam Japan.

The choice of evaluating only five of the largest Swedish Japan funds is motivated by their relative large market share compare to smaller competitors. Also, the main part of Swedish investors in Japan funds invest in the larger funds and the interest of evaluating the performance of these is therefore greater. Furthermore, the time delimitation for this evaluation has been set to

the five years between 2002-2006 in order to show how the performances differ over time, both in the short and the long run.

After choosing suitable foreign and Swedish managed Japan funds, the foreign managed funds' returns, measured in NAV-courses in JPY, have been recalculated into SEK in order to facilitate a comparison. The funds' returns have thereafter been compared with each other and also with the market index. Calculations that have been made show, as explained earlier by the model used for analyzing, which funds had the best performance in terms of non risk adjusted return totally, year by year, on an average return basis and also relative to a benchmark. Moreover, comparisons with regard to the specific fund risk have been made by calculating the risk measurements variance, standard deviation, beta and tracking error. Finally, in order to relate the mutual funds return to their actual risk, a utilization of risk adjusted performance measurements has been made by calculating the Sharpe-quota, Jensen's alpha and Treynor's index. The well-known CAPM-model, often utilized in portfolio theory, also worked as a base for making this analysis in form of differential returns explained by the CML-formula.

The risk free rate of return of 4%, utilized in the calculations, is represented by a FXR-SSV-14 treasury bill of 3,98% (Dagens nyheter 2007).

Secondary data in the form of fund rates has been used to measure the performance of the previously chosen Japan funds. By using parts of the portfolio and capital market theory, relevant and selected for this fund evaluation, calculations from the collected data has been made. And after investigating the empirical finding in line with the model utilized for analyzing results were drawn.

### **2.3 Critics of method**

There are several models and approaches involving different types of variables that can be utilized when evaluating the performances of mutual funds. Naturally, most models include some form of delimitations. In this thesis the purpose has been to investigate the performance of fund managers by looking at the non risk adjusted return, the risk and the risk adjusted return. There are other variables that have been excluded from this investigation that also can affect the outcome. In the case of this thesis' model there have been no adjustments for dividends, often having an impact on the levels of course rates which might affect the outcome of results.

However, since the market index is illustrated without considering dividends, an exemption had to be made in order to facilitate an evaluation. Furthermore, the main purpose with this thesis is to draw conclusions by finding the general fund trend, separating the Swedish funds from the foreign ones, in order to investigate the importance of market presence. The relevance of the individual observation is thereby less important.

Areas such as timing and selectivity, often utilized when making evaluations of fund managers' performance, have also been excluded in this paper. Since a portfolio's total return generally is decided by a few larger, strategic asset holdings and also the flexibility for fund managers is restricted, there has been no strong need to consider timing and selectivity for this thesis (Rundfelt, Rolf 1986 pp 27).

In addition, the impact of taxes for the evaluated funds has been excluded since the analysis is based on both Swedish as well as foreign managed funds, involving different tax rules making a comparison difficult.

When criticizing a research method it is important to consider the aspects of validity and reliability of the investigation made. If an investigation is regarded as highly valid it has been measuring the correct variables, relevant for its purpose. An investigation has a low validity if the models utilized have been measuring the wrong aspects of the sample and can thereby not provide a general approach for the entire population. Reliability can be defined by the accuracy of the investigation and how thoroughly it has been completed. Consequently, reliability comes with validity but reliability alone can not guarantee validity. Reliability and validity are combined regarded as a prerequisite for making a generalization (Wallén G 1996 pp 65-66).

The model chosen for this evaluation is regarded as having a high validity measuring the performance of foreign managed fund managers versus Swedish managed ones in a relevant mode. By looking at non risk adjusted return, risk and risk adjusted return a complete fund analysis, according to the problem formula for this thesis, can be provided. Conclusions can thereby be drawn where the differences in degree of performances are stated. Moreover, the reliability is also regarded as rather high with the exemption of a use of quarterly course rates instead of weekly or monthly, providing a higher accuracy in the calculations. However, a reliable comparison has still been feasible since the purpose is to compare the different funds and not mainly focusing on the individual observation. Calculations have been made thoroughly

according to the theoretical formulas and adjustments for currency differences have been made, providing a high total level of reliability.

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### **3. Theoretical framework**

*This chapter will present essential parts of the portfolio theory area, relevant when making fund analysis. Fund evaluation models that will work as a base for the result will be defined and explained.*

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#### **3.1 Efficient market theory**

“The prices of all assets traded on the stock market fully reflect available information” (Fama, Eugene F, 1970, Journal of Finance, quoted in Fabozzi & Modigliani 2003, pp 117). This hypothesis concerning pricing efficiency was formed by Fama in 1970 in his paper “Efficient Capital Markets: A Review of Theory and Empirical Work”. The efficient market theory has come to play an important role, working as a base for many regularly utilized models in portfolio theory.

There are three forms of efficient markets, weak form, semi-strong form and strong form. The weak form states that asset prices reflect all information coming from historical course rates. In the semi-strong form all publicly available information such as annual reports, is reflected in the prices. Asset prices in the strong form are reflected by all relevant information, including insider information, and no actor has therefore an advantage over another on the stock market (Bodie, Kane & Marcus 2008, pp 361).

If the market really is efficient in its strong form and no actor can benefit over another by better information than another then the role of fund managers could be questioned. Most people would say that the strong market efficiency is rather extreme and not applicable on stock markets in general. But regardless of the actual degree of market efficiency and due to the importance of diversification, fund managers still have an important role on the stock market; creating optimal portfolios that are in line with what investors require (Bodie, Kane & Marcus 2008, pp 365).

Research on the extent of stock market efficiency has been done frequently and several tests show that changes in course rates can not be predicted by only looking at previous course rates. A term often used for describing price movements is “random walk”, a phrase indicating that asset prices develop randomly. However, this statement does not indicate anything about how course rates react to new information. According to different empirical tests, it is possible for investors



to predict future price outcome if they manage to take actions before new information has been published. Since markets react directly to new information, published information no longer has any value. It is central to stress that despite the possibility that fund managers may gain an information advantage over others and thereby over perform the market, it has proved to be very difficult in the long run. The increasing market efficiency has led to many fund managers failing to succeed with investments over time (Rundfelt, R 1986 pp 16-18).

### **3.2 The Markowitz portfolio selection model**

Harry Markowitz, developer of modern portfolio theory, awarded the Nobel Prize in Economic science 1990 for his paper “Portfolio selection” in 1952. Markowitz argued that investors should focus on portfolios’ overall risk and not the risk of an individual asset within the portfolio (Bodie, Kane & Marcus 2008 pp 223). Risky portfolios, comprising only a single asset, are inefficient since diversification of stocks will result in higher expected returns and reduced risk in form of lower standard deviation. By calculating expected returns, standard deviations and correlations, efficient portfolios can be constructed. An efficient portfolio is by definition one that lies on the upper side of the efficient frontier, a combination of stocks that will optimize the risk and return levels (Bodie, Kane & Marcus 2008 pp 223). Raman Uppal (2001 pp 1) writes that an investor should therefore aim to construct a portfolio with negatively correlated assets, moving in different directions in order to increase the effects of diversification. According to Uppal, low covariance will lead to greater risk reduction.

James Tobin, went one step further than Markowitz concerning portfolio optimizing in his article “Liquidity preference as behavior towards risk” (Uppal, Ramal 2001, pp 4-5). He introduced the risk free asset, a term regularly used today in portfolio theory, part of an efficient portfolio combination. By investing in a risk less asset, such as a bank account, in addition to risky stocks, the new frontier portfolio would yield higher return to the same risk. An optimal portfolio combination would therefore be represented by a risk less asset and an amount of risky stocks defined as the tangency portfolio. Thus, investing in a frontier portfolio is an efficient portfolio strategy (Uppal, Raman 2001, pp 4-5).

### **3.3 Sharpe’s CAPM-model**

William Sharpe formed the Capital asset pricing model (CAPM) in the early 60’s when he stated that Tobin’s tangency portfolio in equilibrium actually equals the market portfolio. A market

portfolio would therefore have diversified away the risky stocks unsystematic risks, leaving the portfolio with only the systematic risk (Uppal, Raman 2001, pp 5). According to CAPM the return of all financial investments should, in an efficient market, be the same except for the risk. The risk, defined by the volatility of an asset, is therefore the only factor that motivates differences in the levels of return (Rundfelt, R 1986 pp 20-21). All efficient portfolios, allowing a risk less lending or borrowing, are described by the Capital Market Line (CML) which we can derive from the following equation:

$$R_p = R_{fr} + (R_m - R_{fr}/\sigma) * \sigma_p \quad (3.1)$$

*(R<sub>m</sub>-R<sub>fr</sub>/σ) defines the linear function, known as the Sharpe-quota.*

*R = Expected return of an asset*

*R<sub>f</sub> = The risk free rate of return*

*R<sub>m</sub> = Expected return of the market portfolio*

*(R<sub>m</sub>-R<sub>f</sub>) = Risk premium*

*(Elton & Gruber 1987 pp 275)*

CAPM also introduced the term beta, measuring the systematic risk and how the price of an asset varies in relation to a market index. If an asset has a beta above 1, representing the market index, that asset is regarded to be more risky than the average and should therefore have a higher return (risk premium) in order to compensate for that extra risk ( Rundfelt, R 1986 pp 20-21).

According to the CAPM there is a positive linear relationship between every asset's or portfolio's (efficient or inefficient) expected return and beta value, defined as the Security Market Line, a slope that can be derived from the CAPM-formula below:

$$R = R_f + \beta(R_m - R_f) \quad (3.2)$$

*R = Expected return of an asset*

*R<sub>f</sub> = The risk free rate of return*

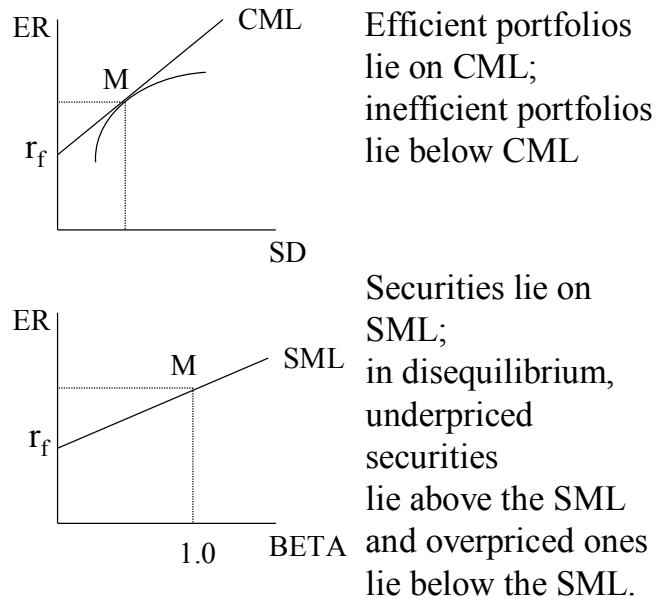
*R<sub>m</sub> = Expected return of the market portfolio*

*(R<sub>m</sub>-R<sub>f</sub>) = Risk premium*

*(Elton & Gruber 1987, pp 275)*

The price of an asset should for that reason consist of a return equal to the risk free asset, a compensation related to the average market portfolio return and also a risk premium of the asset (Rundfelt, R 1986 pp 20-21).

Figure 3-1. Capital Market Line and Security Market Line



### 3.3.1 Critical aspects of CAPM

As the CAPM holds for both single assets and portfolios, different types of empirical tests concerning the reliability of the model have been made. Since the model is based on a number of theoretical assumptions it has been strongly questioned and there are several critical aspects to it. The major difficulty lies in the fact that CAPM is expressed in terms of investors' expectations based on historical inputs, and not in terms of real asset values. Estimating its variables, especially the market risk premium and the beta value, has proved to be very difficult, leaving the outcome rather uncertain (Fabozzi & Modigliani 2003 pp 152-153).

### 3.3.2 Assumptions to the CAPM

In order for CAPM to hold, ten different assumptions must be made, making the outcome less reliable. First, all transaction costs should be excluded. Second, all assets should be regarded as infinitely divisible, allowing an investor to take any position in an investment despite the size of its wealth. The third and fourth assumption states that personal taxes should be excluded when calculating and individuals are incapable of affecting the pricing on the stock market. The market

is therefore regarded to be efficient in its strong form. According to the fifth assumption investors make their choices in terms of expected values and standard deviation of the return of the portfolio. The sixth and seventh assumption states that unlimited short sales are allowed as well as unlimited lending and borrowing at the risk less rate of return. The eight and ninth assumptions assume that investors are concerned with the mean and variance of returns and also have identical expectations regarding the included inputs: expected return, variance of return and correlation structure between the combinations of assets. The last assumption states that all assets are marketable and everything can be traded on the market (Elton & Gruber 1987, pp 262-263).

### 3.4 Mutual fund evaluation measurements

#### 3.4.1 Non risk adjusted performance measurements

Portfolio return is a weighted average of the different assets' return and can be calculated by multiplying the stock return to its weight in the portfolio and thereafter summing them.

The portfolio return formula is:

$$R_p = \sum w_i R_i \quad (3.3)$$

$R_p$  = portfolio return

$w_i$  = stock's weight in the portfolio

$R_i$  = stock's return

(De Ridder 2002, pp 81)

#### 3.4.2 Risk measurements

##### 3.4.2.1 Standard deviation

Standard deviation measures how an investment's total risk varies around its expected value and a high volatility indicates a higher uncertainty of the expected return of the investment. Standard deviation is calculated by taking the square root of the variance, facilitating an analysis of its actual size in percentage (De Ridder 2002, pp 78). The standard deviation formula is:

$$\sigma = \sqrt{\sigma^2 \text{ (variance)}} \quad (3.4)$$

$$\sigma^2 = \sum (RA - ra)^2 / N \quad (3.5)$$

$RA$  = yearly fund return

$R_a = \text{Expected yearly average return}$

$N = \text{number of observations (years)}$

(Elton & Gruber 1987, pp. 16)

#### 3.4.2.2 Beta

The beta value is a risk measurement, describing how an asset's risk varies with a market index and measure how sensitive it is towards changes in the market. It is thereby a risk measurement, connected to the systematic risk.

$$\beta_{\text{beta}} = \text{cov}(RA, RM) / \sigma^2(RM) \quad (3.6)$$

$RA = \text{yearly return of the portfolio}$

$RM = \text{yearly return of the market index}$

$\sigma^2(RM) = \text{yearly variance for the market index}$

$$\text{Covariance}(RA, RM) = \sum(RA - R_a) * (RM - R_m) / N \quad (3.7)$$

$R_a = \text{yearly expected average return of the portfolio}$

$R_m = \text{yearly expected average return of the market index}$

(Rundfelt, R 1986 pp 21)

#### 3.4.2.3 Tracking Error

The purpose with active fund management is to avoid a market index imitation, by performing better than the average. The standard measurement for this purpose is the tracking error (TE), also defined as the active risk. Analysis of fund deviations from market index can be made by calculating TE, an indicator of whether or not a fund has over performed, underperformed or just been imitating the benchmark. A high value of TE states that the fund has had a different development than the market index. But the information we get from TE is, as shown in the formula below, not entirely clear. Consequently, problems can arise when interpreting the result since a high TE can be the effect of either a positive or a negative return.

$$TE = \sqrt{\sum(R_{\text{fund}} - R_{\text{index}})^2 / n} \quad (3.8)$$

(Vindell et al, 2005)

### 3.4.3 Risk adjusted performance measurements

#### 3.4.3.1 Sharpe-quota

A mutual fund portfolio is always expected to yield a higher return than a risk free asset, requiring a positive risk premium in the long run. The Sharpe-quota focuses on the relationship between the risk premium and the risk, expressed in standard deviation, and can be useful when comparing funds in the same industry or towards a benchmark. A high risk fund should, according to the Sharpe-quota formula, yield a higher return than the market index or similar funds with a lower risk, in order to compensate for the extra risk involved. The Sharpe-quota, related to the CAPM-model, therefore indicates that a passively managed portfolio with the strategy to imitate the market index should have a similar Sharpe-quota as the benchmark.

$$\text{Sharpe-quota} = (R_p - R_{fr}) / \sigma \quad (3.9)$$

$R_p$  = portfolio return

$R_{fr}$  = risk free rate of return

(Vindell et al 2005)

#### 3.4.3.2 Jensen's alpha

Alpha, often defined as the excess return, is a measurement of how well the fund manager has performed on an absolute basis and is not related to the systematic risk (Vindell et al 2005). Jensen's alpha expresses the excess return above that predicted by the CAPM and is formulated as (Bodie, Kane & Marcus 2008, p 854):

$$\text{Jensen's alpha} = R_p - [R_{fr} + \beta(R_m - R_{fr})] \quad (3.10)$$

#### 3.4.3.3 Treynor's index

The below formulated Treynor's index focuses, similarly to the Sharpe-quota, on the relationship between the risk premium and risk, but it differs since it uses systematic risk instead of total risk. Treynor's index shall be used when comparing mutual funds towards a market index and other funds in the same industry.

$$\text{Treynor's index} = (R_p - R_{fr}) / \beta \quad (3.11)$$

(Bodie, Kane & Marcus 2008, pp 854)

## 4. Result and analysis

*This chapter will provide the result of evaluating the ten mutual Japan funds, divided into Swedish managed and foreign managed categories. A shorter background description of the funds including key facts will also be presented. Calculations, made according to different fund evaluation measurements, explained in the former chapter, will thereafter be analyzed.*

### 4.1 Result of Swedish managed mutual Japan funds

Table 4-1. Swedish managed funds

Measurements	Folksam	Swed/ Robur	SEB	Nordea	Läns- försäkringar	Average
<b>Non risk adj. performance:</b>						
Average return/year (%)	2,2	0,4	-3	2,2	5,3	<b>1,4</b>
Tot return 2002-06 (%)	10,8	2,2	-14,7	10,9	26,3	<b>7,1</b>
<b>Risk (year):</b>						
Standard dev. $\sigma$ (%)	28,1	26,5	23,9	27,1	22	<b>25,5</b>
Beta $\beta$	0,97	0,91	0,83	0,92	0,74	<b>0,8</b>
Tracking error	4,1	5,5	6,4	5,5	8,7	<b>6,5</b>
<b>Risk adj. performance:</b>						
Sharpe-quota (%)	-0,07	-0,13	-0,29	-0,07	0,06	<b>-0,1</b>
Jensen's alpha $\alpha$	0,11	-1,73	-5,32	0,04	2,79	<b>-0,8</b>
Treynor's index	-1,89	-3,89	-8,31	-1,95	1,75	<b>-2,8</b>
<b>Portfolio and capital market theory:</b>						
CML (%)	5,96	5,84	5,66	5,88	5,53	<b>5,8</b>
<b>Single year observ. 2002</b>						
Return (%)	-28,4	-28,7	-1,17	-1,17	-0,61	<b>-12,0</b>
Sharpe-quota (%)	-1,15	-1,23	-1,17	-1,17	-0,61	<b>-1,1</b>

<b>Single year observ. 2005</b>						
Return (%)	52,6	45,8	42,7	46,9	50,3	<b>47,7</b>
Sharpe-quota (%)	1,73	1,56	1,62	1,88	2,1	<b>1,8</b>

#### 4.1.1 Folksam Japan

The Folksam Japan fund's strategy is to invest in larger Japanese companies in order to diversify the risk. Also it has also a possibility to invest in different types of index instruments.

Investments are made with regard to ethical fund criterion such as human rights, environment and tobacco. The fund has been managed by Birgitta Redig since 2006-05-01 and has a yearly management fee of 0,70%. Morningstar's fund rating system has given the fund four out of five stars (Morningstar 2007; for further fund information, see the website of Morningstar).

Table 4-2. Fund structure Folksam Japan

<b>Five largest stocks:</b>	<b>%</b>	<b>Three largest industries</b>	<b>%</b>	<b>Portfolio structure:</b>	<b>%</b>
Toyota Motor	5.2	Industrial commodities	23.4	Stocks	89,2
Morgan Stanley Cap	3.0	Consumers commodities	21.7	Interest<1year	7,7
Mitsubishi UFJ Financial	2.9	Financial service	21.5	Others	3
Mizuho Financial Group	2.3				
Sumimoto Mitsui financial	1.8				
<b>Total five largest stocks:</b>	<b>15.2</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

#### 4.1.2 Swedbank Japan

Swedbank invests in different larger Japanese companies. The fund has been managed by Nicholas Peacock since 2002-02-01 and has a yearly management fee of 1,40%. In addition to the yearly fee the fund has a sales fee of 1%. According to Morningstar's rating system the fund sits at three stars (Morningstar 2007).



Table 4-3. Fund structure Swedbank Japan

Five largest stocks:	%	Three largest industries	%	Portfolio Structure	%
Toyota Motor	5.6	Industrial commodities	25.7	Stocks	98
Mitsubishi UFJ Financial	3.2	Financial service	21.7	Interest<1year	2
Mizuho Financial Group	2.0	Consumers commodities	20.5	Others	0
Sumimoto Mitsui Financial	1.9				
Takeda Chemical Industry	1.9				
<b>Total five largest stocks:</b>	<b>14.6</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

#### 4.1.3 SEB Japan

This fund invests mainly in Japanese stocks and stock related securities in different industries. Managed by Carolina Minio-Paluello since 2006-09-25 and has a yearly management fee of 1,50%. It has received two stars according to Morningstar's fund rating system (Morningstar 2007).

Table 4-4. Fund structure SEB Japan

Five largest stocks:	%	Three largest industries	%	Portfolio Structure	%
Mitsubishi UFJ Financial	5.0	Industrial commodities	26.5	Stocks	90
Nippon Telegraph	4.0	Financial service	20.8	Interest<1year	9,8
Matsushita Electric	3.5	Consumers commodities	14.2	Others	0,2
Nippon Steel	3.5				
Mitsubishi Electric	3.2				
<b>Total five largest stocks:</b>	<b>19,2</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

#### 4.1.4 Nordea Japan

Nordea invests in Japanese stocks listed on the Tokyo stock market. Managed by Claus Nielsen since 2007-02-19, having a yearly management fee of 1,60% and sits at four stars according to Morningstar's fund rating system (Morningstar 2007).

Table 4-5. Fund structure Nordea Japan

Five largest stocks:	%	Three largest industries	%	Portfolio structure	%
Toyota Motor	7.0	Industrial commodities	27.5	Stocks	98,2
Mitsubishi UFJ Financial	4.9	Consumers commodities	21.7	Interest<1year	1,8
Takeda Chemical Industry	2.9	Financial service	19.1	Others	0
Mizuho Financial Group	2.8				
Mitsubishi	2.7				
<b>Total five largest stocks.</b>	<b>20.3</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

#### 4.1.5 Länsförsäkringar Japan

This fund has an investment focus towards the larger, well-known Japanese companies, listed on the Tokyo stock market. Managed by Jeroen Touw since 2005-06-01 and it has a yearly management fee of 1,50 %. Three stars according to Morningstar's fund rating system (Morningstar 2007).

Table 4-6. Fund structure Länsförsäkringar Japan

Five largest stocks:	%	Three largest industries	%	Portfolio structure	%
Toyota Motor	5.9	Industrial commodities	26.2	Stocks	97,9
Mitsubishi UFJ Financial	3.2	Financial service	21.8	Interest<1year	1,2
Mizuho Financial Group	2.1	Consumers commodities	21.2	Others	0,9
Sumimoto Mitsui Financial	1.9				
Nomura Holdings	1.9				
<b>Total five largest stocks:</b>	<b>15</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

## **4.2 Analysis of Swedish managed funds**

### **4.2.1 Non risk adjusted performance measurements**

Four out of five Swedish managed funds have positive returns on both a yearly basis as well as totally for the five observed years according to table 4-1.. Länsförsäkringar Japan had the best performance with a yearly return of 5,3% and 26,3% in total return. Nordea Japan and Folksam yielded 2,18% and 2,16% on a yearly basis and 10,9% and 10,8% respectively on a total basis. Swedbank-Robur Japan has a return of 0,44% per year and 2,2% totally. The only portfolio generating a negative return of -3% yearly and – 14,7 % totally is SEB Japan. The average portfolio return for the Swedish managed funds is 1,4% yearly and 7,1% for the fund respectively. This result should be compared to the benchmark, MSCI Japan NDTR\_D, with a yearly return of 2% and 10% totally. Hence, there were three portfolios that managed to over perform the market index; Länsförsäkringar Japan, Nordea Japan and Folksam Japan.

### **4.2.2 Risk measurements**

#### 4.2.2.1 Standard deviation

The portfolio with the highest total risk, illustrated in standard deviation, is Folksam Japan with 28,1%. Nordea Japan has a risk of 27,1% followed by Swedbank-Robur Japan with 26,5% and SEB Japan with 23,9%. The least risky portfolio is held by Länsförsäkringar Japan with a standard deviation of 22%. Average risk for the five funds is 25,5% and the market index has a risk of 28,8%. All five Swedish managed funds have therefore lower risk compared to the benchmark.

#### 4.2.2.2 Beta

The result of the systematical risk related measurement, beta, indicates that none of the Swedish managed Japan funds have beta values above 1, representing the market index, and are therefore regarded as low-risk funds for this category. The funds' beta values lay just below 1 with Folksam Japan at 0,97 as the highest followed by Nordea Japan at 0,92, Swedbank-Robur at 0,91 and SEB Japan with a beta of 0,83. Länsförsäkringar Japan has the lowest beta value of 0,74.

#### 4.2.2.3 Tracking Error

The outcome of calculating tracking error proves that none of the evaluated funds have tried to imitate the market index, showing high levels of TE. The highest TE is held by Länsförsäkringar

Japan at 8,7 followed by SEB Japan at 6,4, Nordea Japan and Swedbank-Robur, both at 5,5 and Folksam Japan at 4,1. But these results are not entirely clear since they only indicate that the funds have been managed actively by deviating from the index. Consequently, the underlying reason behind the TE is left unexplained. The only fund that has over performed the index in terms of return is Länsförsäkringar Japan, also having the highest TE at 8,7. The other funds should on the contrary not be regarded as successful in terms of performances, since a high TE also can be a sign of an under performance.

### **4.2.3 Risk adjusted performance measurements**

#### 4.2.3.1 Sharpe-quota

The Sharpe-quota, also illustrating the slope of the CML-curve (see figure 3.1), explains the relationship between the risk and the risk premium, assuming that an asset should yield a higher return than the risk free asset in the long run. The Sharpe-quota defines the extent of gain in units of return, expressed in percentage, when increasing one unit of risk in form of the standard deviation. A high Sharpe-quota therefore indicates a high rate of return in relation to its risk and among the evaluated funds empirical findings show both positive as well as negative Sharpe-quotas. The highest and only positive Sharpe-quota is held by Länsförsäkringar Japan at a rate of 0,06. Negative Sharpe-quotas are being represented by Nordea Japan and Folksam Japan at levels of -0,07 followed by SEB Japan and Swedbank-Robur having Sharpe-quotas at -0,29 and -0,13, all implying negative rates of returns in relation to their risks. The Sharpe-quota of the benchmark index is -0,07, a level that the evaluated funds are judged against. Länsförsäkringar Japan has, as the only Swedish managed fund, managed to over perform the market portfolio, yielding the highest level of return compared to its risk level.

#### 4.2.3.2 Jensen's alpha

The results after measuring the funds' alpha values, defining the excess return on an absolute basis, show that the only fund manager that have over performed the market rather is Länsförsäkringar Japan at a level of 2,79%. Also, Folksam Japan and Nordea Japan managed to yield excess returns of 0,11% and 0,04 % respectively, indicating that they are following the index rather well. SEB Japan and Swedbank Japan were the only funds generating negative alphas values of -5,32 % and -1,73% respectively.

#### 4.2.3.3 Treynor's index

This risk adjusted performance measurement, focusing on the relationship between risk premium and risk expressed in beta, show similar results as earlier calculations. The highest and only positive level is held by Länsförsäkringar Japan at 1,75. The other funds show negative values with Folksam Japan and Nordea Japan at levels of -1,89 and -1,95 respectively. SEB Japan and Swedbank-Robur have large negative values at rates of -8,31 respectively -3,89. This outcome should be evaluated after comparing the results to the benchmark rate of -2, demonstrating that only Länsförsäkringar managed to over perform the market significantly.

#### 4.2.3.5 CML

By calculating the equation for the Capital Market Line (3.1), representing all efficient portfolios, an evaluation of fund managers' performances can be made. According to the theory of CML the optimal portfolio strategy is to invest partly in the risk free asset and the market portfolio in order to increase the return at the same risk. However, fund managers are often restricted in their investment possibilities due to special fund requirements, making this strategy difficult to accomplish in reality. By utilizing the optimal portfolio strategy according to CML, results made from comparing the funds actual returns to their theoretical potential yield are shown in table 4-7.

*Table 4-7. Differential returns according to CML*

	<b>Average annual return</b>	<b>Return according to CML</b>	<b>Differential Return</b>
<b>Folksam</b>	2,16	5,96	<b>-3,8</b>
<b>Swedbank-Robur</b>	0,44	5,84	<b>-5,4</b>
<b>SEB</b>	-3	5,66	<b>-8,66</b>
<b>Nordea</b>	2,18	5,88	<b>-3,7</b>
<b>Länsförsäkringar</b>	5,3	5,2	<b>0,1</b>

These results show that four out of five funds should be regarded as inefficient, located below the CML line, and consequently do not utilize an optimal portfolio strategy. The only fund that appears to have succeeded in choosing fund strategy is Länsförsäkringar Japan with a positive differential return, yielding even more than an efficient CML-portfolio.

### 4.3 Result of foreign managed mutual Japan funds

Table 4-8. Foreign managed fund

Measurements	Credit Suisse	Goldman Sachs	INVESCO	Fidelity	SGAM	Average
<b>Non risk adjusted:</b>						
Average return/year (%)	-6,36	-2,8	-1,4	-1,32	-5,4	<b>-3,5</b>
Tot return 2002-06 (%)	-31,78	-14	-7	-6,6	-27	<b>-17,3</b>
<b>Risk (year):</b>						
Standard dev. $\sigma$ (%)	33,4	34,3	41,3	32,2	32,2	<b>34,7</b>
Beta $\beta$	1,14	1,18	1,4	1,1	1,19	<b>1,2</b>
Tracking error	10,9	7,8	13	6,5	9,8	<b>9,6</b>
<b>Risk adj. performance:</b>						
Sharpe-quota (%)	-0,35	-0,22	-0,15	-0,18	-0,3	<b>-0,2</b>
Jensen's alpha $\alpha$	-8,08	-4,45	-2,59	-3,12	-7,03	<b>-5,1</b>
Treynor's index	-9,09	-5,78	-5,4	-4,83	-7,93	<b>-6,6</b>
<b>Portfolio and capital market theory: (%)</b>						
<i>CML</i>	6,32	6,38	6,87	6,24	6,39	<b>6,4</b>
<b>Single year observ. 2002</b>						
Return (%)	-31,3	-28,4	-28,6	-24,3	-30,5	<b>-28,6</b>
Sharpe-quota (%)	-1,06	-0,95	-0,8	-0,88	-1	<b>-0,94</b>
<b>Single year observ. 2005</b>						
Return (%)	54,9	66,4	84,3	60,7	62,1	<b>65,7</b>
Sharpe-quota (%)	1,52	1,82	1,95	1,76	1,68	<b>1,7</b>

### 4.3.1 Credit Suisse Equity Fund (Lux) Japan Megatrend B

This fund invests in profitable, financially stable and well-managed leading Japanese growth companies with a strategy to reach the highest possible capital growth. The fund has been managed by Satoshi Takeyama since 2005-10-31 and has a yearly management fee of 1,92%. In addition, it also has a purchase fee of 5% and a minimum initial purchase level of 2500 euro (EUR). It received two stars according to Morningstars fund rating system (Morningstar 2007).

Table 4-9. Fund structure Credit Suisse Japan Megatrend B

Five largest stocks:	%	Three largest industries	%	Portfolio structure	%
Mizuho Financial Group	4.9	Consumers commodities	25.3	Stocks	97.4
Toyota Motor	4.6	Industrial commodities	22.4	Interest<1year	2.6
Sr Pharma	3.5	Financial service	19.5	Others	
Canon	3.5				
The Bank of Yokohama	2.8				
<b>Total five largest stocks:</b>	<b>15.8</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

### 4.3.2 Goldman Sachs Japan Portfolio I Inc

Investing mainly in larger stock-listed Japanese companies, Goldman Sachs has a yearly management fee of 0,75% and a purchase fee of 5,5%. The fund also has a minimum initial purchase level of 500 000 JPY. Three stars according to Morningstar's fund rating system (Morningstar 2007).

Table 4-10. Fund structure Goldman Sachs Japan Portfolio Inc

Five largest stocks:	%	Three largest industries	%	Portfolio structure	%
Toyota Motor	5.6	Industrial commodities	30.2	Stocks	96.8
Mitsubishi UFJ Financial	4.6	Financial service	21.4	Interest<1year	3.2
Sumimoto Mitsui Financial	4.4	Consumers commodities	13.6	Others	0
Mitsui & Co.	3.0				
JFE Holdings	2.5				

<b>Total five largest stocks:</b>	<b>20,1</b>				
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*Source: the website of Morningstar (www.morningstar.se)*

### 4.3.3 INVESCO Nippon Select Equity Fund A

This fund invest in larger Japanese companies and can to a limited extent also take positions in Japanese equity warrants and hold convertible bonds issued by Japanese companies in order to maximize return. Managed by Kiyohide Nagata since 2003-10-01 and the yearly management fee is 1,50 %, the purchase fee is 5, 25 % and the minimum initial purchase level is 1500 EUR. In addition, owners of this fund must invest 50 EUR as a minimum per month. Three stars according to Morningstar's fund rating system (Morningstar 2007).

*Table 4-11. Fund structure INVESCO Nippon Select Equity Fund*

<b>Five largest stocks:</b>	<b>%</b>	<b>Three largest industries</b>	<b>%</b>	<b>Portfolio structure</b>	<b>%</b>
Tokyu Land	4.2	Industrial commodities	32.2	Stocks	103
Komatsu Ltd	4.0	Financial service	16.4	Interest<1year	-4.3
Mitsui O.S.K Lines	3.8	Consumers commodities	15,8	Others	1.3
Isuzu Motors Ltd	3.3				
KDDI	3.1				
<b>Total five largest stocks:</b>	<b>18.4</b>				

*Source: the website of Morningstar (www.morningstar.se)*

### 4.3.4 Fidelity Japan Fund A

Fidelity invests mainly in larger Japanese companies. Managed by Robert Rowland since 2004-01-01 and has a yearly management fee of 1,50 % and a purchase fee of 5,25%. The minimum initial purchase level is 2000 EUR and the minimum monthly investment level is 50 EUR. Four stars according to Morningstar's fund rating system (Morningstar 2007).



Table 4-12. Fund structure Fidelity Japan Fund

<b>Five largest stocks:</b>	<b>%</b>	<b>Three largest industries</b>	<b>%</b>	<b>Portfolio structure</b>	<b>%</b>
Toyota Motor	5.8	Industrial commodities	29.8	Stocks	99.1
Sumimoto Mitsui Financial	4.9	Financial service	26.0	Interest<1year	0.9
Mizuho Financial Group	4.8	Consumers commodities	19.8	Others	0
Nintendo	3.3				
Mitsubishi UFJ Financial	2.5				
<b>Total five largest stocks:</b>	<b>21.3</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

#### 4.3.5 SGAM Fund Equities Japan Concentrated Growth A

The strategy of this fund is to perform better than the market index by investing in larger Japanese companies with great growth potential. Managed by Hiroyoshi Nakagawa since 1988-05-31 and it has a yearly management fee of 1,50 %, a purchase fee of 5% and a minimum initial purchase level of 1500 EUR. Two stars according to Morningstar's fund rating system (Morningstar 2007).

Table 4-13. Fund structure SGAM Fund Equities Japan Concentrated Growth

<b>Five largest stocks:</b>	<b>%</b>	<b>Three largest industries</b>	<b>%</b>	<b>Portfolio structure</b>	<b>%</b>
Mitsubishi UFJ Financial	5.8	Financial service	24.6	Stocks	96.9
Sumimoto Mitsui Financial	5.8	Industrial commodities	23.6	Interest<1year	3.1
Canon	4.3	Consumers commodities	21.6	Others	0
Toyota Motor	3.8				
Sony	3.1				
<b>Total five largest stocks:</b>	<b>22.8</b>				

Source: the website of Morningstar ([www.morningstar.se](http://www.morningstar.se))

#### 4.4. Result Index MSCI Japan NDTR\_D

Table 4-14. Index

Measurements	Index
<b>Non risk adjusted performance:</b>	
Tot return 02-06 (%)	<b>10</b>
Average return/y	<b>2</b>
<b>Risk (year):</b>	
Standard dev. (%)	<b>28,8</b>
Beta $\beta$	<b>1</b>
<b>Risk adjusted performance:</b>	
Sharpe-quota	<b>-0,07</b>
Treynor's index	<b>-2</b>

## **4.5 Analysis of foreign managed Japan funds**

### **4.5.1 Non risk adjusted performance measurements**

All five foreign managed funds have generated negative returns totally as well as on a yearly basis. The highest return totally is held by Fidelity at a level of -6,6% and -1,32% per year, closely followed by INVESCO at -7% and -1,4% respectively. Goldman Sachs has a total return of -14% and a yearly return of -2,8%. The lowest rates of returns have Credit Suisse at a level of -31,78% on a total basis and -6,36% per year, followed by SGAM at levels of -27% and -5,4%. Average portfolio return per year is -3,5% and -17,3 in total return. These results show that no foreign managed fund has succeeded in performing better than the market index with a level of 10 % in total return and 2% per year.

### **4.5.2 Risk measurements**

#### 4.5.2.1 Standard deviation

All five funds should be regarded as high-risk funds, having high standard deviations compared to the benchmark, indicating rather volatile course rates. INVESCO has the highest standard deviation at 41,3%, in contrast to the index at a level of 28,8%. SGAM has a total risk of 34,5% followed by Goldman Sachs at a level of 34,3%, and Credit Suisse at 33,4%. The least volatile foreign managed fund is Fidelity, having a standard deviation at 32,2%. Average standard deviation for the funds is 34,7%.

#### 4.5.2.2 Beta

The results after calculating the beta values show that INVESCO is the most risky fund compared to the index, having a beta of 1,4. The other four funds have similar beta values with rather small deviations from the market beta of 1. SGAM has a beta value of 1,19, Goldman Sachs 1,18, Credit Suisse 1,14 and Fidelity has a beta value of 1,1.

#### 4.5.2.3 Tracking Error

TE, explaining the degree of variation from the market benchmark, states that all five funds are actively managed. But due to strong under performance, in terms of return on a total as well as a yearly basis, the result after calculating the tracking error only informs us of how much the funds have deviated from index. INVESCO has the highest difference compare to the index with a TE of 13 followed by Credit Suisse at 10,9, SGAM at 9,8 and Goldman Sachs at 7,8. The lowest TE is held by Fidelity with 6,5, indicating a rather large underperformance.

### **4.5.3 Risk adjusted performance measurements**

#### 4.5.3.1 Sharpe-quota

The foreign managed funds having Sharpe-quotas closest to the market index level of -0,07 is INVESCO and Fidelity with -0,15 and -0,18 respectively. Still, none of the funds have positive slopes of the Capital Market Line and are consequently not generating a higher pay-off in relation to their risk levels. The other funds show lower levels of Sharpe-quotas, demonstrating that an increase in the risk level will cause even more negative returns. The lowest Sharpe-quota has Credit Suisse with a level of -0,35 followed by SGAM at -0,3 and Goldman Sachs at -0,22. This outcome shows that these funds' risk levels, expressed in standard deviations, are too high to pay off in terms of compensating return.

#### 4.5.3.2 Jensen's alpha

All five foreign managed funds fail to produce positive alpha value, the indicator of an excessive return on an absolute basis. The result show highly negative values, signaling that the level of under performances is soaring. The worst performance has Credit Suisse at a level of -8,08 followed by SGAM at -7,03. Goldman Sachs has an alpha of -4,45 and Fidelity and INVESCO have values of -3,12 respectively -2,59.

#### 4.5.3.3 Treynor's index

The result after calculating the Treynor's index, a Sharpe-quota similar measurement expressed in the systematic risk beta, show that the funds in general fail to compensate for their high risk. Credit Suisse has the highest negative value of -9,1 followed by SGAM at -7,93. Goldman Sachs has a level of -5,78 and INVESCO and Fidelity levels of -5,4 and -4,8. The comparing benchmark has an index quota at -2.

#### 4.5.3.5 CML

The table below shows the result after calculating the foreign managed Japan funds' theoretical portfolio return according to the strategy of efficient portfolios, located at the CML-line.

Table 4-15. Differential returns according to CML

	Average annual return	Return according to CML	Differential Return
<b>Credit Suisse</b>	-6,3	6,32	<b>-12,62</b>
<b>Goldman Sachs</b>	-2,8	6,38	<b>-9,18</b>
<b>INVESCO</b>	-1,4	6,87	<b>-8,27</b>
<b>Fidelity</b>	-1,32	6,24	<b>-7,56</b>
<b>SGAM</b>	-5,4	6,39	<b>-11,79</b>

The five evaluated funds have strongly under performed according to the CML-equation. Located below the capital market line with rather high levels of negative differential return, they are thereby not considered as efficient. By utilizing the strategy of investing in a risk free asset and the market portfolio as a part of the fund, considerably higher returns could have been yielded.

## 4.6 Analysis of Swedish managed funds versus foreign managed funds

### 4.6.1 Non risk adjusted performance measurements

Four out of five Swedish managed Japan funds have yielded positive returns to their investors without considering the risk. Länsförsäkringar Japan, as the only fund to highly over perform the market index, had the greatest performance on both an average yearly basis with a return level of 5,3% as well as totally with a return of 26,3%. For the foreign managed funds the outcome was different, showing only negative results. Fidelity had the least negative performance of the five evaluated funds with -6,6% in return totally and -1,32% per year. Credit Suisse had a poor performance with a rate of return at -31,78% and -6,36% respectively. None of the foreign managed funds had the ability to over perform the benchmark. According to the empirical findings, the Swedish managed funds had an overall better performance than the foreign funds.

### 4.6.2 Risk measurements

After calculating the standard deviation and beta values of the Swedish managed funds, the result show that they should be regarded as low-risk funds, having standard deviations and beta values below the market index level of 28,8% and 1. Länsförsäkringar is the least risky fund with a standard deviation of only 22% and a beta value of 0,74. On the other hand, the foreign managed funds can be regarded to be highly risky, with all showing standard deviation and betas above the market index. INVESCO has the highest risk, with 41,3% in standard deviation and 1,4 in beta

value. Consequently, the return of these foreign funds is far more volatile than the Swedish managed ones, making them very uncertain.

The result after measuring the Tracking Error shows that no fund, Swedish managed nor foreign managed, have had a passive investment strategy with a purpose to imitate the market index. All funds have high levels of TE but only one fund, Länsförsäkringar Japan, has a high TE due to an overperformance. The other funds have managed to reach high levels of TE by deviating negatively from the benchmark.

#### **4.6.3 Risk adjusted performance measurements**

The results from calculating risk adjusted measurements show that the Swedish managed funds have an overall better performance than the foreign managed funds. The Sharpe-quotas, assuming that an asset in the long run should yield a higher return than the risk free asset, have mainly negative outcomes among the evaluated funds. The only fund having a higher quota than the market index' Sharpe-quota of -0,07 is Länsförsäkringar Japan with 0,06. The other nine funds show negative levels of Sharpe-quotas in line or below the market index. So for that reason, the majority of the evaluated funds, Swedish managed and foreign managed, fail to compensate for their risk in terms of extra return.

Calculations of alpha values also confirm that the majority of funds have under performed compared to the market index with the exception of Länsförsäkringar Japan, the only fund with a notably positive alpha of 2,79. Two other Swedish managed funds show values in line with the market index but the rest have negative levels, indicating that they have not managed to yield an excessive return to their investors.

When analyzing the funds' performances in terms of risk, expressed in standard deviation, the CML-line has been used to illustrate how applicable the theory of efficient portfolios is on the ten evaluated Japan funds. The result show that only Länsförsäkringar Japan have a positive differential return of 0,1%, signaling a successful fund strategy. The other funds have negative differential returns, particularly among the foreign managed funds, indicating less successful investment strategies.

#### **4.6.4 Fund structure**

The fund structure, illustrating the five largest holdings, shows that Swedish managed funds to a larger extent than the foreign managed funds tend to imitate their competitor, having similar assets in larger Japanese companies. Four out of five funds for example have Mitsubishi UFJ Financial as one of their five largest holdings. Three out of five have Toyota Motor and Mizuho Financial Group and two out of five invest in Sumimoto Mitsui Financial. For the foreign managed funds the diversification of the five largest assets appears to be greater, indicating less similar investment pattern. This also holds when it comes to the structure of the three largest industries within the fund. The majority of Swedish managed funds invest mainly in the industrial commodities sector, followed by the financial sector and the consumer commodities sector. For the foreign managed funds the investment pattern seem to be more dispersed, indicating that fund managers' might act more independently when selecting stocks.

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## 5. Conclusions

*This chapter will present a discussion based on the analysis of the empirical findings in order to draw conclusions. Suggestions of future research will thereafter be provided.*

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The main objective for this thesis has been to analyze and find supporting empirical evidence to the hypothesis of local market insight as a successful strategy for fund managers acting on the Japanese market. This has been accomplished by utilizing a model that investigates the three variables, non risk adjusted return, risk and risk adjusted return, tools that together are useful and relevant when making this type of fund evaluations. These three variables return have provided a base for drawing conclusions of how well the funds have performed. However, results after making this fund evaluation fail to confirm that local market insight has any significant role in superior fund performance.

By looking at the overall performance in terms of non risk adjusted return the Swedish managed funds have surprisingly managed to highly outperform the foreign ones with an average return on a total basis at a rate of 7,1%. The outcome for the foreign funds were on the other hand negative, showing an average return of -17,3%. Four out of five Swedish managed funds yielded a positive return to the investors unlike the foreign managed ones where none had a positive return. This result becomes more interesting when risk adjusting, indicating that the highly risky foreign funds under performed to an even larger extent than what would be expected. In order to investigate whether or not the foreign funds could still be superior during peak years, a single year observation were made for 2005, a year with high positive returns. The only aspect of this investigation that gives priority to the foreign managed funds is when excluding the risk during a peak year. The foreign funds had a higher return during 2005 with an average of 65,7% compared to the Swedish funds with 47,7%. Yet, the results showed that despite levels of high return on an absolute basis they failed to compensate for their high risk.

That foreign managed funds work with higher risk levels than the Swedish managed ones is an indicator of different investment strategies. I believe that their high management fees can be an underlying reason, driving the fund managers to invest in more volatile assets in order to compensate for investors' requirements. A high uncertainty naturally involves a higher cost of capital since investors require more return on invested money. This explains why the foreign managed funds performed better than the Swedish funds did on an absolute basis during the peak



year of 2005. But the interesting aspect is the effect of risk adjustments, showing that the funds still under perform, something that investors probably are unaware of.

The Swedish managed funds' less active investment strategies seem to have been more successful in the case of the Japanese market even though only one fund, Länsförsäkringar Japan, notably performed better than the index. Also, all five funds are larger banks having the majority of market shares on the Swedish fund market, a possible reason for not taking on too high risks that can put their reputation at stake. Moreover, since fund management is not the core industry for banks, in contrast to foreign funds, their investment strategies naturally become less aggressive. Furthermore, the analysis show that the Swedish funds seem to act alike, supporting previous research by Max Zamilian (1997) that Swedish managed funds generally have similar investment pattern, often with the few largest holdings in the same stocks as their competitors. These stocks are generally represented by the larger and most well-known companies. Empirical findings after analyzing the fund structure in terms of five largest assets show that as much as four out of five evaluated Swedish Japan funds as mentioned earlier are investing in Mitsubishi UFJ Financial and three out of five invest in Toyota Motor and Mizuho Financial for example.

Another interesting aspect of this evaluation is the funds' apparent lack of ability to over perform the market index, indicating that investments in a cheaper index-fund would have been preferable. That only one out of ten Japan funds managed to outperform the market is not a good sign of successful fund management. Thus, the Japanese stock market seems to be rather efficient, making it difficult for investors to yield excess return by creating competitive advantages. Empirical findings also show that the market index is superior, supporting the theory of market efficiency in its stronger form where no investor can perform better than another in the long run.

A rather unexpected but yet interesting finding is how strongly the depreciation of the Japanese yen has affected the performance of the foreign managed funds. It is rather easy to be deceived by fund rates, having NAV-courses in JPY, since they show greater performance in local currency than they actually have when measuring in SEK. Recalculations show that the Japanese yen has depreciated approximately 24% from the beginning of 2002 until the end of 2006, having a great impact on the foreign funds. Consequently, Swedish investors have received less yearly returns in SEK and thereby experienced a loss due to the depreciation. This strong effect on fund return, caused by currency differences, is for that reason something that investors must consider when buying shares in foreign funds.

In the fund evaluation process it is of great importance to also consider external factors, having an impact on fund performances beyond the control and skills of any fund manager. Significant for the Japanese market is its volatility with highly dispersed levels of return when evaluated over time. The time series for this thesis was set to five years between 2002 and 2006 which was generally represented by negative rates of return with an exception of year 2005. This can be explained by the fact that the Japanese economy has been facing a recession for several years with a future outcome that still must be regarded as rather uncertain, making investors hesitant to investing in the Japanese stock market.

The base for making this fund analysis has mainly consisted of past course rates used as inputs in different evaluation measurements, informing how well a fund has performed. Using historical information in order to predict future outcome can never be regarded as fully reliable, leaving the result of this fund evaluation somewhat uncertain. The model that has been utilized when analyzing involves a great amount of both unreal assumptions as well as expected values, making it difficult to draw conclusions by looking at individual observations. However, the essential part of this thesis has not been the individual observations, but using the empirical findings in order to localize where the trend is heading. Hence, the evaluation has not given us any information supporting the premise of foreign fund managers as superior when acting on a local market.

## **5.1 Future research proposals**

A proposal for future research applying this thesis' hypothesis is an analysis of markets in an earlier industrial stage, such as China or Russia. Less mature markets might be characterized by weaker market efficiency and consequently lead to a different outcome. The Japanese market is just as mature as the American one for instance, indicating strong market efficiency according to the theory of efficient markets where prices adjust directly to new information. So, for that reason it could be rewarding to investigate how important local market insight is on a less transparent market where superior performance among fund managers is regarded as achievable.

Furthermore, the time delimitation for this evaluation of five years is rather short and since the main part of the analyzed years have been characterized by negative return it would be interesting to see how an evaluation of ten or fifteen years could turned out. A longer time horizon as well as

a utilization of a larger fund sample would be regarded as more reliable when drawing conclusions, making probable deviations less.

The importance of local market insight for successful fund management has not been confirmed in this paper. However, since empirical findings after analyzing the funds are not regarded as fully reliable when drawing conclusions there is still a strong need of further research in this area. And if the outcome of such future research can support the importance of local market insight or not is to find out.

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## Appendixes

### Appendix 1 Quarterly returns Swedish managed funds (%)

	Länsförs.	Nordea	SEB	Swedbank	Folksam
2002 Q1	-3,5	-2,5	1,2	-1,1	0
2002 Q2	-6,3	-5,9	-6,9	-8,3	-8,1
2002 Q3	12,1	-11,9	-12,2	-11,5	-13
2002 Q4	-10,7	-9,9	-8	-11,2	-10,4
2003 Q1	-13,9	-15,7	-11,5	-13,5	-12,3
2003 Q2	2,3	5,9	2,2	2,5	5
2003 Q3	15,4	20	11,9	16	17,4
2003 Q4	0,4	2,5	-0,3	1,5	1,7
2004 Q1	20	22,2	18	17	18,9
2004 Q2	-3,9	-4,7	-2,4	-5	-4,1
2004 Q3	-10,8	-9,4	-10,2	-11,5	-10,9
2004 Q4	1	2,2	-0,9	3,6	0,4
2005 Q1	4,2	1,9	4,4	2,7	5
2005 Q2	7,3	5,7	6,8	6	7,2
2005 Q3	16,9	19,6	15,1	16,8	17,6
2005 Q4	15	14,1	11,2	14,7	15,3
2006 Q1	3,6	3,3	3,6	4,5	3,4
2006 Q2	-12	-11,7	-11,2	-13,4	-10,7
2006 Q3	-0,7	0,5	-1,1	1,3	0,5
2006 Q4	-3	-4,5	-5	-3,5	-1,8

**Appendix 2 Quarterly returns foreign managed fund  
in JPY (%)**

	<b>Credit Suisse</b>	<b>Goldman Sachs</b>	<b>INVESCO</b>	<b>Fidelity</b>	<b>SGAM</b>
2002 Q1	1,5	1,2	-1,3	1,2	-2
2002 Q2	-8,9	-5,5	-5,7	-4,5	-3,8
2002 Q3	-14,1	-11,8	-11,5	-10,2	-11,4
2002 Q4	-10,1	-11,8	-9,9	-9,4	-13,5
2003 Q1	-11,8	-10,2	-12,4	-9,8	-10,1
2003 Q2	3,5	2,9	9	7,3	4,5
2003 Q3	18,1	14,4	18	18,5	18,1
2003 Q4	-1,2	14,4	1,2	2,5	-1,1
2004 Q1	18,5	1,5	16,6	18,2	17,4
2004 Q2	-4,8	17,5	-0,8	-4,4	-4,9
2004 Q3	-11,8	-3,3	-11,1	-11,6	-15,3
2004 Q4	-0,2	-10,9	1,1	1,8	-1,2
2005 Q1	1,4	2,3	6,1	1,2	2
2005 Q2	7,6	9,1	9	7	8,2
2005 Q3	14,1	19,3	22,7	18	19,9
2005 Q4	17,9	18,4	23,1	19,2	16
2006 Q1	3,6	3	-0,7	2,5	1,2
2006 Q2	-15	-13,6	-16,4	-14	-14,6
2006 Q3	-3,2	-0,4	-1,3	0,1	0,2
2006 Q4	-5,6	-1,6	-4,3	-2,2	-3,1

### Appendix 3 Currency rates

	Currency rate		Difference
	SEK/100 JPY		
2002 Q1	7,84	7,795	<b>0,99426</b>
2002 Q2	7,7	7,68	<b>0,997403</b>
2002 Q3	7,64	7,615	<b>0,996728</b>
2002 Q4	7,595	7,395	<b>0,973667</b>
2003 Q1	7,325	7,145	<b>0,975427</b>
2003 Q2	7,17	6,685	<b>0,932357</b>
2003 Q3	6,68	6,93	<b>1,037425</b>
2003 Q4	6,98	6,8	<b>0,974212</b>
2004 Q1	6,73	7,275	<b>1,080981</b>
2004 Q2	7,255	6,945	<b>0,957271</b>
2004 Q3	6,975	6,635	<b>0,951254</b>
2004 Q4	6,6	6,375	<b>0,965909</b>
2005 Q1	6,485	6,59	<b>1,016191</b>
2005 Q2	6,58	7,085	<b>1,076748</b>
2005 Q3	7,06	6,86	<b>0,971671</b>
2005 Q4	6,83	6,78	<b>0,992679</b>
2006 Q1	6,74	6,595	<b>0,978487</b>
2006 Q2	6,6	6,33	<b>0,959091</b>
2006 Q3	6,29	6,195	<b>0,984897</b>
2006 Q4	6,19	5,78	<b>0,933764</b>



### Appendix 4 Quarterly returns foreign managed fund in SEK

	<b>Credit Suisse</b>			<b>Goldman Sachs</b>			<b>INVESCO</b>		
	Return in JPY	Return in SEK	Adjusted return to SEK %	Return in JPY	Return in SEK	Adjusted return to SEK %	Return in JPY	Return in SEK	Adjusted return to SEK %
2002 Q1	1015,0	1009,2	<b>0,9</b>	1012,0	1006,2	<b>0,6</b>	987,0	981,3	<b>-1,9</b>
2002 Q2	911,0	908,6	<b>-9,1</b>	945,0	942,5	<b>-5,7</b>	943,0	940,6	<b>-5,9</b>
2002 Q3	859,0	856,2	<b>-14,4</b>	882,0	879,1	<b>-12,1</b>	885,0	882,1	<b>-11,8</b>
2002 Q4	899,0	875,3	<b>-12,5</b>	882,0	858,8	<b>-14,1</b>	901,0	877,3	<b>-12,3</b>
2003 Q1	882,0	860,3	<b>-14,0</b>	898,0	875,9	<b>-12,4</b>	876,0	854,5	<b>-14,6</b>
2003 Q2	1035,0	965,0	<b>-3,5</b>	1029,0	959,4	<b>-4,1</b>	1090,0	1016,3	<b>1,6</b>
2003 Q3	1181,0	1225,2	<b>22,5</b>	1144,0	1186,8	<b>18,7</b>	1180,0	1224,2	<b>22,4</b>
2003 Q4	988,0	962,5	<b>-3,7</b>	1015,0	988,8	<b>-1,1</b>	1012,0	985,9	<b>-1,4</b>
2004 Q1	1185,0	1281,0	<b>28,1</b>	1175,0	1270,2	<b>27,0</b>	1166,0	1260,4	<b>26,0</b>
2004 Q2	952,0	911,3	<b>-8,9</b>	967,0	925,7	<b>-7,4</b>	992,0	949,6	<b>-5,0</b>
2004 Q3	882,0	839,0	<b>-16,1</b>	891,0	847,6	<b>-15,2</b>	889,0	845,7	<b>-15,4</b>
2004 Q4	998,0	964,0	<b>-3,6</b>	1008,0	973,6	<b>-2,6</b>	1011,0	976,5	<b>-2,3</b>
2005 Q1	1014,0	1030,4	<b>3,0</b>	1023,0	1039,6	<b>4,0</b>	1061,0	1078,2	<b>7,8</b>
2005 Q2	1076,0	1158,6	<b>15,9</b>	1091,0	1174,7	<b>17,5</b>	1090,0	1173,7	<b>17,4</b>
2005 Q3	1141,0	1108,7	<b>10,9</b>	1193,0	1159,2	<b>15,9</b>	1227,0	1192,2	<b>19,2</b>
2005 Q4	1179,0	1170,4	<b>17,0</b>	1184,0	1175,3	<b>17,5</b>	1231,0	1222,0	<b>22,2</b>
2006 Q1	1036,0	1013,7	<b>1,4</b>	1030,0	1007,8	<b>0,8</b>	993,0	971,6	<b>-2,8</b>
2006 Q2	850,0	815,2	<b>-18,5</b>	864,0	828,7	<b>-17,1</b>	836,0	801,8	<b>-19,8</b>
2006 Q3	968,0	953,4	<b>-4,7</b>	996,0	981,0	<b>-1,9</b>	987,0	972,1	<b>-2,8</b>
2006 Q4	944,0	881,5	<b>-11,9</b>	984,0	918,8	<b>-8,1</b>	957,0	893,6	<b>-10,6</b>

### Appendix 4 Quarterly returns foreign managed fund in SEK

	<b>Fidelity</b>			<b>SGAM</b>		
	Return in JPY	Return in SEK	Adjusted return to SEK %	Return in JPY	Return in SEK	Adjusted return to SEK %
2002 Q1	1012,0	1006,2	<b>0,6</b>	980,0	974,4	<b>-2,6</b>
2002 Q2	955,0	952,5	<b>-4,7</b>	962,0	959,5	<b>-4,0</b>
2002 Q3	898,0	895,1	<b>-10,5</b>	886,0	883,1	<b>-11,7</b>
2002 Q4	906,0	882,1	<b>-11,8</b>	865,0	842,2	<b>-15,8</b>
2003 Q1	902,0	879,8	<b>-12,0</b>	899,0	876,9	<b>-12,3</b>
2003 Q2	1073,0	1000,4	<b>0,0</b>	1045,0	974,3	<b>-2,6</b>
2003 Q3	1185,0	1229,3	<b>22,9</b>	1181,0	1225,2	<b>22,5</b>
2003 Q4	1025,0	998,6	<b>-0,1</b>	989,0	963,5	<b>-3,7</b>
2004 Q1	1182,0	1277,7	<b>27,8</b>	1174,0	1269,1	<b>26,9</b>
2004 Q2	956,0	915,2	<b>-8,5</b>	951,0	910,4	<b>-9,0</b>
2004 Q3	884,0	840,9	<b>-15,9</b>	847,0	805,7	<b>-19,4</b>
2004 Q4	1018,0	983,3	<b>-1,7</b>	988,0	954,3	<b>-4,6</b>
2005 Q1	1012,0	1028,4	<b>2,8</b>	1020,0	1036,5	<b>3,7</b>
2005 Q2	1070,0	1152,1	<b>15,2</b>	1082,0	1165,0	<b>16,5</b>
2005 Q3	1180,0	1146,6	<b>14,7</b>	1199,0	1165,0	<b>16,5</b>
2005 Q4	1192,0	1183,3	<b>18,3</b>	1160,0	1151,5	<b>15,2</b>
2006 Q1	1025,0	1002,9	<b>0,3</b>	1012,0	990,2	<b>-1,0</b>
2006 Q2	860,0	824,8	<b>-17,5</b>	854,0	819,1	<b>-18,1</b>
2006 Q3	1001,0	985,9	<b>-1,4</b>	1002,0	986,9	<b>-1,3</b>
2006 Q4	978,0	913,2	<b>-8,7</b>	969,0	904,8	<b>-9,5</b>