-A comparative study between Swedish and foreign hedge funds-

Authors:
Mats Christoffer Andersson
Linus Nilsson
Jeanette Quach

Tutors:
Christer Nilsson
Annika Fjelkner

Abstract

Title: A comparative study between Swedish and foreign hedge funds

Subject: Bachelor Dissertation, Finance – FEC685

Authors: Christoffer Andersson, Linus Nilsson, Jeanette Quach

Tutors: Christer Nilsson and Annika Fjelkner

Purpose: In this dissertation we focus on how hedge funds registered in Sweden are behaving compared to foreign hedge funds. Since the Swedish regulation concerning hedge funds is tough, we believe that this might affect the performance of the Swedish hedge funds, both negative and positive. The purpose then, is to be able to find out what benefits Swedish hedge fund investors the most – investing in Swedish hedge funds, or investing abroad.

Methodology: We formed hypotheses according to how we thought hedge funds registered in Sweden should perform in comparison with foreign hedge funds, since we believe that the Swedish hedge funds will perform differently due to sterner regulation. Since we test these hypotheses with statistical methods we are using a deductive approach. The data used are mainly of a secondary nature available from hedge fund indexes.

Conclusions: The statistical measures could not support any differences between the Swedish and foreign hedge funds.

Keywords: Hedge funds, risk reduction, investment portfolios, investment regulations, exchange rate fluctuations.

Acknowledgements

Table of Content

List of Figures

List of Tables

Chapter 1

Introduction

In this first chapter we will present the background of this dissertation and state why we decided to write about hedge funds. Then the research problems and questions will be defined as well as the purpose, hypotheses and limitations. At the end of the chapter the outline is presented to give the reader an overview.

1.1 Background

After having formed the group, we soon discovered that we had one thing in common; we wanted to have a future career working within the banking sector. As a result, we decided to write a dissertation that will be useful as reference when looking for jobs in the future. To get a more precise topic, that would suit this purpose, we contacted some banks to get a somewhat clearer picture of what they thought would be an interesting subject. It soon became clear that bankers want to know more about hedge funds. Not only is it an investment option that is growing fast, but there is not much research about it either.

The investment concept of hedge funds has been growing rapidly in popularity over the past two decades (Anderlind, 2003). It first started as an alternative for wealthy individuals and large institutions in the USA in the early 1980's, and a decade later, hedge funds were established in Europe as well. Due to a rather unorthodox investment approach, hedge funds are controversial and the financial authorities in many countries have made it impossible for hedge funds to register there. A few countries in Europe, including Sweden, made it possible to have domestic hedge funds so the nations' investors would not have to go offshore to invest. As a result of this, domestic hedge funds were started in Sweden during the mid 1990's and the number of Swedish hedge funds have since then been growing fast.

Hedge funds are different from mutual funds since they can adopt different investment techniques to be better protected when the market goes down. It is not uncommon that hedge funds invest extremely aggressively and use a high debt ratio to benefit from a

high leverage, something that mutual funds are not allowed to do. Hedge funds practice what is called an *absolute goal*, which is to make money at all times, even when the market goes down. Mutual funds, on the other hand, only invest in shares and bonds, and can not really do much in the event of a down turning market. Therefore, they practice what is called a *relative goal,* which is to perform better than an index used for reference. Mutual funds are successful as long as they beat this reference index, even if they actually lose money.

A common pattern for foreign hedge funds is that they are registered in tax havens since they are then able to follow more liberal investment rules, something that is desirable for fund managers. In Sweden though, Finansinspektionen (FI), the state's financial governing agency, has made it possible to have hedge funds registered within the country if the hedge fund managers accept to follow a less aggressive investment strategy and allow a higher degree of transparency so that everyone who wants to, can get information about what the hedge fund is investing in. This sterner regulation might have an effect on the performance for the Swedish hedge funds compared to the foreign hedge funds because the Swedish fund managers can not do as risky business as their foreign colleagues. As a result, the Swedish hedge funds might find it more difficult to reach the goal – to achieve an absolute return. On the other hand, the sterner regulation in Sweden might also make the Swedish hedge funds more stable since they must keep the risk level low and constant at all times. The famous LTCM hedge fund, that we will discuss more in chapter three, encountered serious financial problems and had to be liquidated in 1998 since they used a debt ratio that was far above an administrative level (Valuta och Penningpolitik 1999).

What is important for an investor in Sweden is to find out how much, if any, the performance data for the Swedish hedge funds differs from the foreign ones. The Swedish investor can then choose to invest either in Sweden or go to another country, depending on what he thinks is most profitable. If the latter alternative is preferred, then he must also consider the currency fluctuations as well.

1.2 Definition of a Hedge Fund

The definition of the term "hedge" is: "*A trade designed to reduce risk.*" (Futures and Options Markets). The term "hedging" is defined as: "*Reduce one's risk of loss on (a bet or speculation) by compensating transaction on the other side.*" (Oxford English Reference Dictionary, 2nd edition (2002)). What is clear is that the concept of hedging is about creating a "shield" to protect the investment from uncertain movement in the market. However, there is not one single technique that hedge funds follow to accomplish this shield since, in reality, all hedge funds are unique with their individual investment strategy. In the following, when we mention the term "hedge fund**",** we are talking about funds that are using different techniques to limit money losses when the market goes down.

1.3 The Importance of Hedge Funds

With hedge funds operating on a global scale, they tend to stabilize the markets in which they conduct business (Finansiell Stabilitet, 2006:1). One example of this is that they tend to equalize price on, say, shares that are traded in different stock exchanges.

It is a well known fact that the market fluctuates up and down. Mutual funds can only earn money when the market goes up. Here lies the difference since hedge funds can use other investment methods, they can gain money, at least in theory, even in a sluggish market. A more detailed discussion of this will take place in chapter three. The importance of this is that individual investors and institutions can enhance the chances of earning a yield when the market is unstable.

1.4 Research Problems

A lot of the existing hedge funds are registered in tax havens, not only to benefit from lower taxes, but also because they can then adopt more liberal investment strategies. Examples are a wider set of investment options (shares, bonds, currencies, futures and commodities), less insight into the management and the ability to operate under a high degree of leverage. Hedge funds registered in Sweden, on the other hand, must follow laws outlined by Finansinspektionen, the governing agency of the country's financial market (Anderlind, 2003). This set of laws governs the Swedish hedge fund market to a much greater degree. The fund managers have to specify in what field(s) the hedge fund is going to do business in, accept a higher transparency and use lower leverage. From

our knowledge thus far, we believe that due to the tougher regulation in Sweden, hedge funds registered here will have a tendency to show lower extreme values, both in yield and volatility compared to foreign hedge funds.

In this dissertation we are going to focus on persons in Sweden who want to invest in hedge funds. Has it been better over the last five years to have the money invested in foreign instead of Swedish hedge funds? We must also, in order to determine this, examine the currency fluctuation since this also affects the value of the investment.

1.5 Research Questions

- When focusing on fluctuation, which determines the risk level in a hedge fund, how have the Swedish hedge funds performed compared to the foreign hedge funds?
- Is there any difference in the yield for Swedish and foreign hedge funds?
- When considering financial performance, how have Swedish and foreign hedge funds performed compared to each other?
- When applying currency fluctuation between the SKr and the USD to the yield, will it then be more favorable to invest in Swedish hedge funds?

1.6 Purpose

The purpose for writing this dissertation is to be able to describe if the hedge funds registered in Sweden differ from foreign hedge funds when focusing on performance data. We have developed hypotheses according to the French psychologist Leon Festinger's ideas that will be tested via statistical methods. After the tests, we will focus on the currency fluctuation that has occurred over the examined period. Finally, we will be able to give a more detailed description of how a person residing in Sweden who wants to invest in hedge funds should do, when choosing from investing in either Swedish or foreign hedge funds.

1.7 Hypotheses

To answer the research questions stated above the following hypotheses have been created:

Hypothesis 1: Swedish hedge funds show a lower volatility than foreign hedge funds

Hypothesis 2: Swedish hedge funds will show a lower yield compared to foreign hedge funds

Hypothesis 3: Swedish hedge funds will more likely show absolute return

Hypothesis 4: Swedish hedge funds will have a higher Sharpe ratio than the foreign hedge funds

Hypothesis 5: There will be no correlation between Swedish and foreign hedge funds concerning volatility

Hypothesis 6: There will be no correlation between the Swedish and foreign hedge funds concerning yield

Hypothesis 7: The performance data for all the markets has been symmetric

Hypothesis 8: The exchange rate fluctuation between the SKr and USD will make it more favourable for a Swedish investor to invest in Swedish hedge funds

1.8 Limitations

Since the Swedish hedge fund market is, in an international comparison, extremely small, a problem automatically occurs when comparing the data. We will compare the performance for the hedge funds divided per investment strategy for the Swedish and foreign hedge funds. Since the number of Swedish hedge funds per strategy is quite small, there is a problem that the performance for a given Swedish strategies might not be normally distributed.

Another limitation is that we are using three internet sites in order to gather secondary data; Morningstar for the Swedish hedge funds, Centre for International Securities and Derivates Markets (CISDM) and Hedge Index (Credit Suisse & Tremont) for the foreign hedge funds. The reason for using two sources for the foreign hedge funds is that none of them includes the same strategies as the Swedish hedge funds follow. However, if we collect data from them both, we are able to create complete indexes that are consistent with the Swedish hedge funds strategies.

There is a problem that we only know how the indexes at the CISDM site are constructed. We have contacted Morningstar and Hedgeindex and asked about how their indexes are compounded, but they have not replied. The CISDM indexes are equally weighted. Since we can not do anything about the other indexes, we will not adjust them but simply use the data in the same manner as the data from the CISDM index.

1.9 Outline

This dissertation has the following outline:

Chapter 2: The method of dissertation is presented. The choice of methodology is explained and continues with the data collecting process. There is also a discussion about the scientific approach and the validity of the dissertation.

Chapter 3: The theoretical frameworks that we will base our theory on are presented in more depth; how hedge funds work, risk and regulation.

Chapter 4: This chapter discusses how we will evaluate the Swedish and foreign hedge funds. The statistical methods that will be used to compare the data are discussed. Since there are problems with the indexes construction, there is a discussion about this.

Chapter 5: In this chapter, the empirical findings that we use to answer our hypotheses are presented.

Chapter 6: In this chapter we present the analyses that are based on the empirical part.

Chapter 7: The conclusions that can be drawn from the data are presented. A discussion about the analyzed results takes place**,** were we answer our research question. We also write about the practical implications that our findings can be used for. The chapter ends with suggestions for further research.

1.10 Summary

Without any doubt, hedge funds have become an important investment option. The concept is still relatively new and there is not much research conducted about the topic. There are generally two approaches that countries take towards hedge funds, either they like and accept them or they dislike them and have put up strong regulations to make it hard for hedge funds to be registered in the individual countries. As a result, a lot of the world's existing hedge funds are registered in tax havens. Sweden has though, like in many other cases, decided to take the middle path. We accept hedge funds, but they have to follow a strict regulation**.** The reason for this tougher regulation is to protect the customers. It seems plausible that Swedish hedge funds will be less risky since fund managers have to keep the risk level low at all times. On the other hand, since the fund managers can not adopt as liberal investment options as their foreign colleagues, the Swedish hedge funds might not be able to achieve as high yield. In this dissertation, we are going to investigate how hedge funds registered in Sweden differs from foreign hedge funds when it comes to financial performance. We can then state that if a Swedish investor will benefit more from investing in foreign hedge funds that also contains a higher risk, than simply investing in the home market.

Chapter 2

Method

In this chapter we will present the methodology that is being used and also have a discussion about the collected data, both primary and secondary, even if the latter category is most used.

2.1 Choice of Methodology

As stated above, the purpose of this dissertation is to try to find out how well hedge funds registered in Sweden correlate with foreign hedge funds concerning financial performance. We first got the idea of writing about hedge funds after a conversation with Mikael Ekelund at Sparbanken Finn in Lund. According to him, hedge funds are a new concept and there is not much research conducted about them either. After this conversation, we searched in databases belonging to Swedish Universities and Colleges, and it became clear that we could not find many dissertations about hedge funds. As a result of that, we decided to write about hedge funds. After having developed our main outline, we had to narrow it down. Therefore, we read literature and articles about hedge funds in order to find an interesting approach that we could use. From the book *Hedgefonder*, we found out that the Swedish Hedge Fund market is tighter regulated than the markets in most other countries. Since we are studying international business, we all agreed that it would be suitable for us to create research questions in which we compared the Swedish hedge funds with foreign hedge funds. Since we have sterner regulation in Sweden, we believe that this will be shown in the performance data if we compared Swedish and foreign hedge funds.

Since we have developed theories that are about to be tested via different statistical methods, we are using a deductive approach (Mark Saunders, Philip Lewis & Adrian Thornhill, 2007). According to them, deduction means that you first develop a hypothesis and then you test it and observe the outcome and how well it correlates with beforehand made assumptions.

2.2 Data Collection

Below we present the two data categories being used **-** primary and secondary data. This dissertation mostly focus on indications generated by secondary data, but the primary data provide some information that is mentioned in the theoretical chapter.

2.2.1 Primary Data

Even if we only use primary data sparsely, it is necessary to write something about it. To be able to get to know more about how Swedish banks view and rate their customers when it comes to risk, and how much risk they are willing to accept, we contacted Peter Olsson at Färs & Frosta Sparbank in Lund for an interview. It became clear that he would not give us much information. The reason for not doing this, he told us, was that banks have only been practicing this kind of risk management for a couple of years. After the Dot Com bubble burst in 2000 and investors lost a lot of money, banks were obligated to develop an approach how to better handle their customers' level of risk-acceptance. Since this is still rather new, and that all banks have their individual technique to measure and determine the risk level, there is also a high level of secrecy which means they will not talk about it to outsiders. However, we did receive some information that will be discussed in the part that deals with risk in chapter three.

Since a majority of hedge funds are managed from the United States, we saw it as important to get to know more about the US hedge fund regulation. First, we contacted professor Paul Williams at California Lutheran University in California, since one of the authors was attending his classes in a course last semester, to be able to know more about the U.S. regulation. Since he felt that he was not able to fully answer our questions, he introduced us to a colleague of his, attorney Kapp L. Johnson, who also works as a professor at CLU. After that, we had e-mail correspondence with him.

2.2.2 Secondary Data

In order to collect secondary data, we used three different internet sites. The data concerning the Swedish hedge funds was collected from Morningstar (http://www.morningstar.se/), which is a well known and independent provider of financial information. Since it is possible to divide the data provided from this site into four categories, based on the hedge fund investment strategy, this was done since it made the whole comparison process easier.

The data concerning the foreign hedge funds, then, was collected from two different internet sites. The reason for this is that none of them presented data divided per investment strategy in the same manner as Morningstar did. However, if we combined the two foreign sites, we were able to collect data that matched the Swedish investment strategies. We primary collected the data from the Centre for International Securities and Derivates Markets (http://cisdm.som.umass.edu/), which is an independent source for financial information provided by the University of Massachusetts. Since that site lacked the data we needed for the fund-of-funds strategy, we had to get that from another source. For that purpose we collected it from Credit Suisse/Tremont (http://www.hedgeindex.com), which are two well known Swiss banks.

To be able to calculate the sharp ratio for the hedge funds, which is the return over the risk free return, we needed the risk free rate to accomplish this. Since we are focusing on Swedish investors, we only used the Swedish risk free rate, which we got from the Swedish National Debt Office (www.rgk.se).

In order to follow how the exchange rate has changed between the SKr and the USD over the examined period, we collected that data from Statistics Sweden: (http://www.scb.se/).

2.3 Scientific Approach

When analyzing the collected data to test our hypothesis we will use a positivistic philosophy (Saunders *et al.*, 2006). With this philosophical angle, Saunders *et al.* claims that the researcher should try to affect the collected observed data as little as possible by adopting a value free standpoint. As a result of that, we are going to be as objective as possible. This should not be too much of a problem, since a majority of the data to be collected is of a quantifiable nature, and therefore, hard for the researcher to change.

The quantitative data will not tell us much by only presenting it. Therefore, to make it more truthful, there is a need to process it in statistical ways to give it more reliability. Reliability is defined as "*the trustworthiness of the observations*" (Igelström, 2004, p12). In the book "*Research Methods for Business Students*, Saunders e*t al.* refers to another author, Robson, who claims that there is likely a problem to occur when using statistical methods to analyze quantitative data. Robson say that it is "*… a field where it*

is not at all difficult to carry out an analysis which is simply wrong, or inappropriate for your purpose. And the negative side of readily available analysis software is that it becomes that much easier to generate elegantly rubbish." To limit this problem, it is crucial to pay attention to the validity. Validity is defined as "*Do we really measure what is to be examined?*" (Igelström, 2003, p13). Therefore, we will use well known statistical and financial performance techniques with great caution, to at least minimize the possibility of discrepancy.

2.4 Reliability and Validity of the Dissertation

2.4.1 Validity

The validity is usually defined as to what degree the measures being used really answers what they are supposed to answer (www.socialresearchmethods.net). For this dissertation, that means that the information that we will be using throughout the research must relate to the research questions. The chief problem here might be the limited number of hedge funds registered in Sweden. This is because the Swedish hedge fund market is rather new. This low frequency might affect the mean values being used, and because of that, the information might deviate from the expected. In other words, a few extreme values will then have a grave effect on the estimates, resulting in a decreased validity.

2.4.2 Reliability

Reliability for a quantitative approach is to estimate how reliable the researcher's measurements are. If the research's reliability is high, then two independent studies will give the same result, independent of when and under what circumstances the research is carried out (Lundahl & Skärvad, 1999). This dissertation is mainly based on a quantitative approach, which means that the reliability is crucial. The data being used will therefore be carefully controlled and compared to other sources. The estimated reliability of this dissertation must be considered as being high since the outcome should be the same when repeating the calculations at other times, *ceteris paribus*, since the data is examined fair and objectively without any personal interpretations that could be the case with interviews.

2.5 Criticism of data sources

The data that has been used is both of primary and secondary character. When it comes to the primary data, the fact that the persons interviewed might not tell us everything

that they knew, for what ever reason, is a problem. There is nothing we can do about this problem.

For the secondary data then, we will use three providers of financial information. First, for the performance of hedge funds, there is a problem that we do not know how they have constructed their indexes, and if they all use the same technique. One of the providers of the data is an information service that is managed by two Swiss banks. They might have incentives to present data that looks better than really is the case. There is little that we can do about this problem, so will simply assume that there are no differences in the indexes. For the data concerning currency fluctuation and risk free rate, those are collected from independent Swedish institutions and should be considered unbiased.

Chapter 3

Theory

In this chapter there will be a discussion of what a hedge fund is and how the market for hedge funds has been growing under the past decades. Since it is crucial for an investor to understand the concept of risk, we will have an introduction to this subject. The chapter also deals with the Cognitive Dissonance Theory, developed by Leon Festinger, which will be used to test our hypotheses.

3.1 Introduction to Hedge Funds and Market Growth

The concept of "hedge funds" seems to be rather new. They first came into focus during the mid 1990's when media started to write about them, because at that point, they created a high return for the investors (Anderlind, 2003). At that time, the main investors were wealthy private persons and large institutions. But as a result of the articles, people with a more regular income became interested in investing in hedge funds as well since they also wanted to be able to benefit from the high returns, so the market for hedge funds started to grow rapidly. Since then, the average annual growth has been 25 percent (Anderlind, 2003).

However, even if hedge funds came into focus during the 1990's, they had already existed for about four decades. In 1949 the first hedge fund was founded in the USA by Alfred Winslow Jones (Finansiell Stabilitet, 2006:1). His revolutionary idea was to create a portfolio with both long and short positions of shares. When the market went up, then the shares would increase in value, just like for a regular portfolio of shares. When the market went down though, he could still earn money from his short positions. In this way, the hedge fund was protected from the market. This is the core of the concept **"hedge"** since it can be seen as a shield that is protecting the investor from the market fluctuations.

3.2 What Distinguishes a Hedge Fund from a Mutual Fund

Mutual funds must follow certain rules when searching for investment opportunities (Anderlind, 2003). These rules states, among other things, what kind of shares the fund managers can buy. For example, if the fund invests in the information technology

segment, then the fund manager can not deviate by investing in, say, the car industry, even if it looks more attractive. The fund must also have a certain percentage of the capital invested at all times.

Hedge funds, on the other hand, can adopt other techniques of investment strategies to earn money, both when the market goes up and also when it plummets. Normally, a hedge fund follow certain investment strategies (more about this in the *Investment Strategy* section in this chapter), but they have much more freedom to determine investment options. In the example above, the fund manager can easily change from shares in information technology to the car industry. Hedge funds do not have to stick to shares all the time though. They can also perform other types of investments like bonds, currency, futures and commodities.

The main difference between mutual and hedge funds, though, is that hedge funds also can take short positions. By taking a short position, the fund manager finds shares that are overvalued and are expected to drop in price. He then borrows the shares from other parts and sells them spot. Then, in the future, at a before agreed date, he buys back the shares on the market and hands them over to the right owner again. If the share really has dropped in price, he profits from the difference between the selling and buying-back price.

It is also possible for fund managers handling hedge funds to let the fund operate under high leverage to increase the yield. This is not possible for mutual funds.

3.3 Characteristics of Hedge Funds

Even if hedge fund can be very different in nature, they generally have the following in common:

• It is a limited partnership. The owning structure is divided into two parts: General Partnership - the persons owning and managing the fund - and a Limited Partnership - those who invest money into the funds. With hedge funds, the owner has his own money invested as well. The main difference then is that hedge fund managers have their own money at stake.

- To be able to benefit from more liberal investment regulation, a majority of the existing hedge funds are located in tax havens such as Bermuda, the British Virgin Islands and the Cayman Islands.

- The invested money is often "locked" into the fund for a time period and cannot be easily withdrawn by the investor (Finansiell Stabilitet 2006:1).

- Hedge funds operate with a high amount of leverage to be able to gain a higher return.

- Often, there is a certain minimum amount of money that the investor has to pay. This amount of money can be from SKr 500.000 or more.

- Mutual funds and hedge funds have different goals. A mutual fund has a relative goal, which is to beat a reference index, while a hedge fund has an absolute goal; which means to present a positive return at all times, independent of the market.

- Most hedge funds are small (Finansiell Stabilitet 2006:1). A majority of all funds have less than $100 million invested and half of the hedge funds less that $25 million. The reason is that smaller funds are easier to manage.

3.4 Investment Strategy

Often the term hedge fund is widely used to refer to a fund that is trying to be protected when the market goes down. Hedge funds are seen as one entity. But this is to simplify the matter a great deal. In reality, there are a lot of different hedge funds that follow different investment strategies. To attract more investors, hedge funds often follow certain investment strategies since it is then easier for an investor to determine what the hedge fund is investing in. The type of investment strategies is dependent on which source is used. In this dissertation, we use Harcourt Investments' classifications (Anderlind, 2003).

3.4.1 Market-Dependent Hedge Strategies

This is the most common hedging strategy representing 55 percent of the global hedge funds. The way that the hedge funds within this segment operate is to try to find over- and under valued shares and take positions depending on the outcome. If a share is overvalued, the fund takes a long position and vice versa. Historically, market-dependent strategies have been the most aggressive ones operating with a high leverage resulting in both high yield and volatility.

3.4.2 Market-Dependent Bond Strategies

About six percent of all hedge funds fall into this category. This type of strategy is similar to the one mentioned above, but the focus is instead on bonds. Bonds issued by government and big companies are fluctuating in price depending on how the market values them (Ross, Westerfield & Jordan, 2006). All bonds are constantly graded by credit institutions like Standard & Poor and Moodys. The grades then determine how likely it is that the issuer will default and this determines the risk and price of the bonds.

This strategy are divided into sub categories with some hedge funds buying bonds with higher grades (more stable) whilst others invest in so called junk bonds with low grades and high risk.

3.4.3 Tactical Futures

Hedge Funds working with futures are often called *Commodity Trading Advisors, Managed Futures* or *Tactical Traders*. They only invest in the futures and options market. In total, this strategy represents eight percent of all hedge funds. The futures market is characterized as being highly liquid since there are many companies around the globe that want to hedge from currency fluctuations and as a result, operate on the futures markets. Tactical futures have, over the years, had a lower risk adjusted rate of return compared to hedge funds in other segments. The main reason for this is because of the nature for tactical futures are different, with no shares or bonds involved, and then, they are not correlated to the stock markets.

3.4.4 Market-Independent Hedge Strategies – Arbitrage

Hedge funds in this segment represent 25 percent of the total hedge funds. Here, the fund manager tries to find shares, for example, that are miss-priced in one market compared to another, so called market imperfections. If it is possible, the manager then buys the shares when they are cheap and sells them on another, more expensive market. The ability to find market imperfections in the markets today has become hard since actors relies on advanced information systems that makes it possible to keep a close eye on what is going on at the moment. Therefore, fund managers working in this segment often buy or sell when great quantities of commodities are traded at a specific time and temporarily affect the price level.

3.5 Hedge-Fund Regulation

A large part of the world's hedge funds are registered in tax havens like the Bahamas, Bermuda or the Cayman Islands, to mention some of the most common places (Anderlind, 2003). One obvious reason for this is to benefit from lower taxes. But the chief reason though, is that tax havens have much more liberal investment regulations that the fund managers can benefit from. One example of this is that even if a large number of the worlds' hedge funds are managed from the United States (see section 3.10 for longer discussion) they are registered in tax havens so that the fund managers can follow more liberal investment techniques.

3.6 Hedge Funds' Regulation in the United States

As just mentioned, since a large number of all hedge funds are managed from the Untied States, it is of interest to briefly talk about the regulation there concerning hedge funds. There are two classifications of hedge funds in the USA; *domestic* and *offshore* (Kapp L. Johnson, 2006).

3.6.1 Domestic Hedge Funds

Domestic hedge funds are unregistered pooled investment vehicles that are formed within the United States and open, but not offered, to the public. A majority of these hedge funds are structured as Limited Liabilities Companies (LLC's). When hedge funds are registered as a limited partnership, the investment advisors are also the general partner. With this construction, the hedge funds are not required to register with the Securities and Exchange Commission (SEC) which is the national financial governing agency in the United States, because the funds are considered as "one" client. There is also another reason that makes it possible for domestic hedge funds not to be registered. Since they target a limited number of investors, less than 100, it is not possible for everyone to invest in the hedge funds, and therefore, the law states that they are not required to be registered. Because of this, the domestic hedge funds only target people that have a certain net worth; both because they want rich customers, but also because wealthy persons in general have a greater knowledge about risk, and can afford to bear it. Since they are not registered with SEC, they are allowed to adopt a wider range of investment strategies that are not open for mutual funds.

3.6.2 Offshore Hedge Funds

Like domestic hedge funds, offshore hedge funds are unregistered pooled investment funds, but they are registered outside the United States. Hence, they can still be managed from the United States. They are open only to non-U.S. investors or, in some cases, U.S. tax-exempt investors. The main difference is that offshore hedge funds are structured as corporations and can because of this, target an, at least in theory, unlimited number of investors.

3.7 Hedge Fund Regulation in the European Union

Within the European Union, most funds are so called UCITS (Undertakings for Collective Investments in Transferable Securities) funds (Anderlind, 2003). With the UCITS regulation, the fund market in the European Union is harmonized and the law states explicitly what fields a fund can do business in and how it should be managed. Hedge Funds, with their different investment methodology, do not comply with the UCITS regulation, and therefore, are not allowed. It is up to the individual states to decide about to allow hedge funds or not. Some countries like Finland, Ireland, Luxembourg, Sweden and the United Kingdom, see hedge funds as important investment options and have as a result made it possible to have hedge funds registered domestically. Other states, though, dislike hedge funds and have formed regulations so that hedge funds can not be registered within those countries.

3.8 Hedge Fund Regulation in Sweden

In Sweden, which is in the foreground among European countries when it comes to hedge funds, Finansinspektionen (FI) the national financial governing agency, has made it possible for domestic hedge funds by providing a set of rules called "Lag om Investeringsfonder", (LIF 2004:16). This set of rules deviates from the UCITS regulation (Anderlind, 2003). Under this set of rules, the hedge funds are designated as Nationella Fonder (National Funds) and can adopt an investment strategy different from mutual funds. To be able to register a hedge fund under this act, the issuer must be able to pass a trial to prove that they can follow the regulation stated by FI. Because LIF and UCITS are not harmonized, hedge funds registered in Sweden are not allowed to be marketed in other countries belonging to the European Union.

In LIF, the 6th chapter specifically deals with hedge funds. There are three articles that the hedge funds must follow:

- Article one states that the hedge fund can, under certain circumstances, limit the investors' right to acquire shares in the hedge fund. It must, however, be open at least once a year so that the investors can sell their assets.

- Article two is about the investment strategy and how it is executed. The strategy must at all times correlate to the given risk level.

- Article three states that the hedge fund must, on an annual basis, report to Finansinspektionen the funds' estimated risk level.

3.9 Changing the Rules

Since the hedge fund market has been growing fast over the last decades, which means that an increasing number of people want to invest and the fact that hedge funds have some positive effects on the markets, regulators in some countries have proposed new laws that will make it possible for hedge funds to be registered domestically. In Europe, France, Germany and Italy have recently altered their regulations so that hedge funds can be registered in those countries (Simmons & Simmons, 2005).

But criticism has also arisen and some want to get rid of the laxity that surrounds the hedge funds (Hedge Fonder och Det Finansiella Systemet 2006). In 2004, the SEC adopted the "Hedge Funds Rule" that required all hedge fund managers to count all their investors as "clients" (Johnson, 2006). The managers also had to comply with the advisor regulation and adopt a program of code and ethics from the SEC. In 2005 though, the U.S. Court of Appeals for the District of Columbia Circuit made the Hedge Fund Law redundant in the case Philip *Goldstein v. SEC* 451 F.3d 873. The court stated that the term "client" was counter intuitive since hedge fund managers do not act as individual investment advisors. Instead they allocate capital that is pooled from a number of investors instead of giving advise to individual investors how to allocate their own capital. So right now no one knows what is going to happen with the regulation. Kapp L. Johnson claims that "we are in a wait and see position".

Pleaders for sterner regulations face the problem that the legal domicile for hedge funds can easily change (Hedge Fonder och Det Finansiella Systemet, 2006). If the United States and the European Union decide to apply tougher regulation, it is a plausible scenario that domestic hedge funds will wind up and move to tax havens instead.

According to the Basel Committee, after the collapse of the LTCM hedge fund (a longer discussion of this later in this chapter), it is better to "improve the banks' risk management vis-à-vis hedge funds," than "to attack" the hedge funds (Hedge Fonder och Det Finansiella Systemet, 2006, p 102).

3.10 Domicile and Registration of Hedge Funds

Most hedge funds have their domicile in either the USA or tax havens such as the Cayman Islands, British Virgin Islands, Bermuda and the Bahamas (Anderlind, 2003). The reasons that the number of hedge funds in the United States is so great is that, first, hedge funds first started there, and second, there are a lot of wealthy investors. The reason that tax havens are so popular is because of their flexible investment policies that are desirable for fund manager. Figure 3.1 shows where the majority of the world's hedge funds are managed from. However, there is a difference between domicile and registration (Anderlind, 2003). As just mentioned, tax havens practice laxity regarding investment regulation that is desirable for a person who is launching a hedge fund. As a result, many of the hedge funds are registered in tax havens even if they are managed from somewhere else (particularly the USA). Figure 3.2 shows where a majority of all hedge funds are registered.

Figure 3.1 where hedge funds mare managed
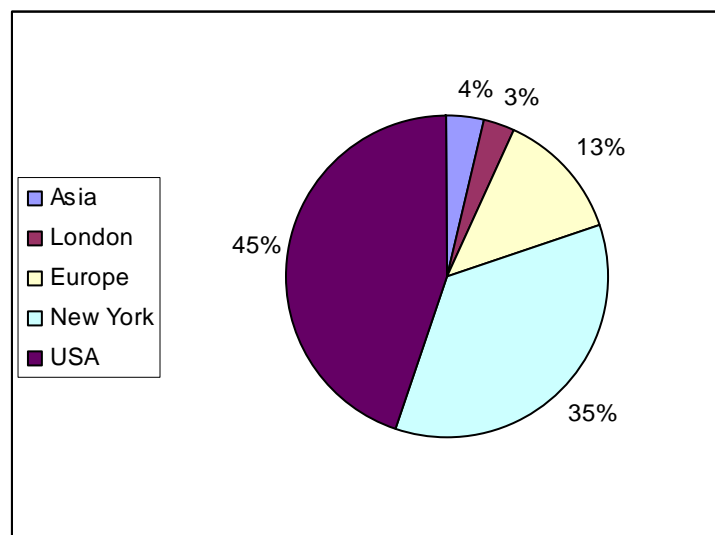
Figure 3.2 where hedge funds are registered
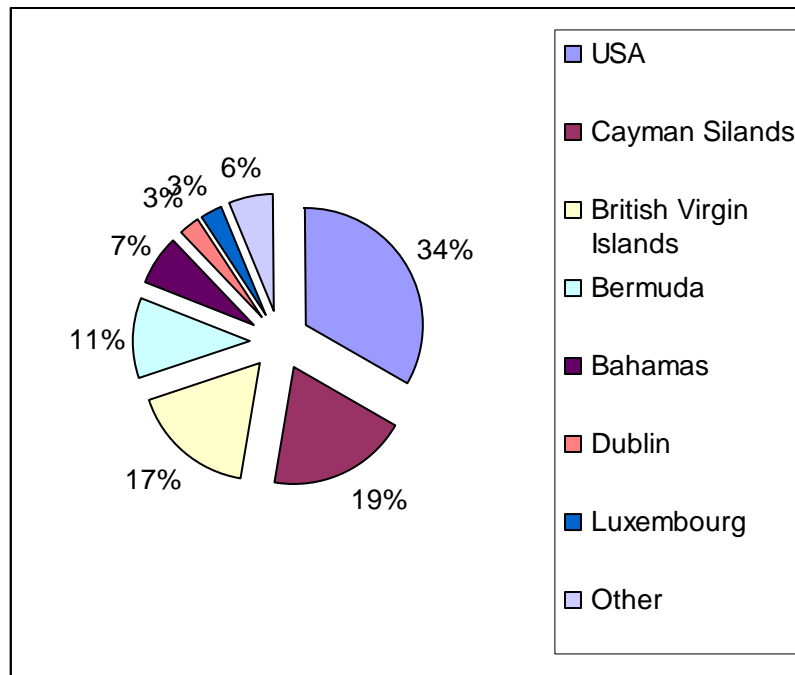
3.11 Positive Effects of Hedge Funds

Since a hedge fund is supposed to generate a yield independent of the way the market goes, at least in theory, it is of course obvious that this will provide investment opportunities when the market plummets.

Another point is that when focusing on portfolio theory, it is easier to construct a portfolio that is less correlated to the market if a part of that portfolio consists of hedge funds (http://www.investopedia.com).

According to Lars Nyberg, vice chairman of Riksbanken (the Swedish Central Bank), hedge funds have important duties since they provide liquidity on markets and make pricing mechanism on commodities more transparent (Dagens Industri, 2006).

3.12 Negative Effects of Hedge Funds

From an individual perspective there are also some drawbacks of investing in hedge funds. One that is often mentioned is the high fees (Anderlind, 2003). With hedge funds, the investor pays an annual fee between 1-2 percent of the invested capital, just like for a mutual fund. The difference is that hedge funds also have a performance based fee that often is between 20 to 25 percent of the return. As a result, the investor might have to

pay a really high fee. With fund-of-funds the criticism is particular true, when the investor will have to pay different "layers" of fees.

Another point of criticism is that hedge funds are more risky by nature (Kruse *et al.*, 1999). Since hedge funds can use more liberal investment strategies and a high degree of leverage it is natural that their nature of doing business is riskier. On example is when the (in)famous LTCM (Long Term Capital Market) hedge funds had to be liquidated in 1998 because they operated under an extremely high debt ratio (www.federalreserve.gov).

Other criticism has risen since many hedge funds have changed focus towards a more speculative nature (www.moneyweek.com).

Some criticize hedge funds for conducting unethical business by profiting on others. George Soros gained a lot of money with his Quantum hedge fund during the currency speculation against the British Pound in the autumn of 1992 (Walter *et al.*) It is not determined though, that his massive profit was related to the attack against the Pound, but it is plausible, and as a result, hedge funds have gained negative publicity.

3.13 Risk in Hedge Funds versus Mutual Funds

As mentioned earlier, hedge funds have an absolute goal and mutual funds practice a relative goal (Anderlind, 2003). The risk then depends on the goal being practiced. For hedge funds, that are supposed to make money no matter what happens to the market, risk is specified as *the probability that the fund will actually lose money*. Mutual funds then, that are comparing themselves with a reference index, define risk as *the probability that the fund will perform worse than the reference index*. Hence, if the mutual funds lose money, they are still seen as having met their goals, as long as they beat the reference index.

3.14 Risk Premium

An investor can choose to buy bonds issued by government or large corporations and benefit from the yield they will generate (Ross *et al.,* 2006). Even if this kind of investment should be viewed as secure, the downside is that the yield will be low. Therefore, an investor might instead be willing to bear a higher risk to get a higher

return, as long as the higher return is in proportion to the higher amount of risk. This is called *risk premium*.

3.15 Systematic and Unsystematic Risk

Risk can be divided into two **sub-categories**, *systematic* and *unsystematic* risk *(Ross et al., 2006)*.

3.15.1 Systematic Risk

Systematic risk affects the entire market and is also called *market risk*. There are several factors that affect the systematic risk; GDP, inflation and war, to mention some. For example, if inflation goes up, then it can have negative effects on the entire market; all companies are affected. To measure how much an individual share is correlated to the market, the *beta (β)* value is used. A beta value of one is perfectly correlated to the market and the share rise/fall with the same percentage as the market. A share with a beta of, say, 1.5, will go in the same direction as the market, but 1.5 times as long; if the market goes down 10 percent, then the share goes down 15 percent. Commodities with lower beta values are seen as more stable investments, but the downside is that they do normally not generate as high yield as commodities with higher beta values.

3.15.2 Unsystematic Risk

Unsystematic risk then only affects individual companies and is also called *unique* or *asset specific* risk. (*Ross et al. 2006*). An example could be a strike in one company. Other companies in the same line of business are not affected.

3.15.3 Total Risk

If we combine systematic and unsystematic risk, we get the total risk;

Systematic risk + Unsystematic risk = Total risk

What is important here is to notice that an investor is only rewarded for the systematic risk since he is able to diversify away the unsystematic risk by constructing a portfolio. Table 3.1 shows how a portfolio becomes less volatile (risky) with an increasing number of shares. The reason is that shares within the portfolio represent individual companies that are not correlated to each other. With a total number of 50 different shares in the portfolio, the standard deviation, here indicating the systematic risk, will stagnate at a constant level just under 20 percent.

Table 3.1 reduction of systematic risk (Ross el al., 2006, p 406, modified)

Number of shares in portfolio	Average standard deviation in portfolio	Ratio of portfolio standard deviation of a single share
1	49.24%	1.00
2	37.36%	0.76
4	29.69%	0.60
6	26.64%	0.54
8	24.98%	0.51
10	23.93%	0.49
20	21.68%	0.44
30	20.87%	0.42
40	20.46%	0.42
50	20.20%	0.41
100	19.69%	0.40

3.16 International Diversification

Bruno Solnik showed that the systematic risk can be lowered even further if the investor creates a portfolio of shares from different countries (Eng, Lees & Mayor, 1995). By doing this, he removes the diversifiable risk, something that a domestic investor can not do. Solnik claims that each domestic share market has its own level of systematic risk. By combining shares from different countries, the total level of systematic risk get lower since shares in different countries are not correlated. In figure 3.3 below, the systematic risk for a portfolio of 50 shares will be slightly above 30 percent if the investor decides to invest only within the USA. If he then constructs a portfolio with the same number of shares, but from different countries, the systematic risk decreases to only 12 percent.

Figure 3.3 the benefits from international diversification (Eng et al., 1995. p620)
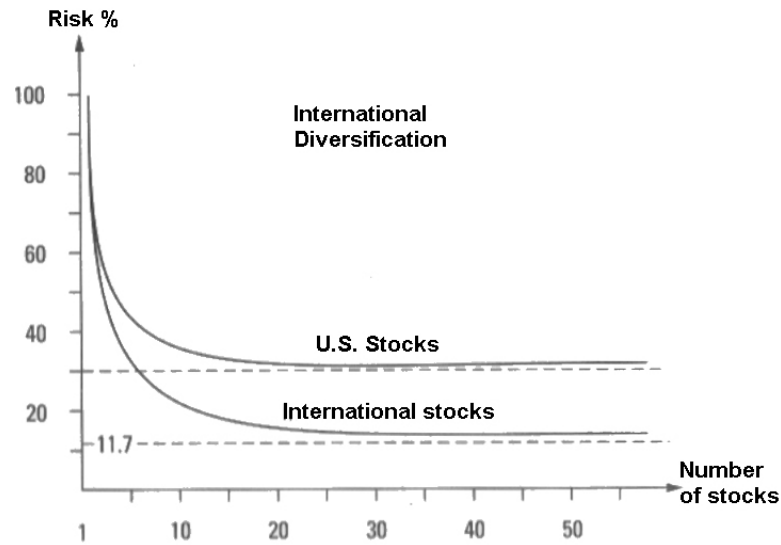
There is another benefit from international diversification if we consider currency fluctuations. Solnik stated that US investors holding foreign equity did benefit when the dollar depreciated due to devaluation in the early 1970's. This is straight forward. Since the investors had parts of the portfolio in foreign investments, those parts were not affected by the depreciation of the dollar.

3.17 Systematic Risk for an Investor

A portfolio in which a part of the money is invested in a hedge fund will be diversified and the total amount of risk lower. If the hedge fund then is in another country, this is even truer. A risk avoiding Swedish investor should invest ten percent in a hedge fund. On the other hand, if the person accepts to bear a higher risk, then it is recommended to have between 15 to 20 percent invested in a hedge fund (Olsson, 2006).

3.18 How Yield is Achieved

Since mutual funds are dependent on the market, their performance is correlated to the way the market goes. The fund manager does not have many options to place the money, since he must follow the strategy for the fund, which is to at all times have a given percentage of the money invested in shares that suits the funds policy (Anderlind, 2003). The yield that is generated depends mostly of the market outcome, like when it goes up. Since the yield mostly depends on the market, it is called *Beta (β)*.

Hedge fund managers can adopt more flexible investment strategies and achieve yield when the market goes down. As a result, the performance for a hedge fund depends on the fund manager's skill. To determine how successful the fund manager has been, this is measured with *Alfa (α)*.

3.19 Value at Risk

In order to keep the risk level for a hedge fund constant, fund managers use the Value at Risk or VaR model (Walter *et al*, 1999). Hedge funds, even if they follow different investment strategies, often have goals considering how high the total risk level for the fund should be. If this level is overstepped, then the fund manager has to buy or sell assets to adjust it again. The VaR model determines the loss which will be exceeded, within a given probability, within a specific time period. The characteristic of the model is that it assumes that the yield and risk exposure are normally distributed. A problem with the model was clear during Russia's financial crisis in 1998, when the market became volatile and went down. Fund managers then, who used the VaR, got the same indications: sell to adjust the risk level again. And when they sold off assets, just to adjust the risk level, the market plummeted further. An example of how VaR works is displayed in figure 3.4 below which shows a normal distribution curve. When there is a normal distribution, the chance that the fund will lose more than X, is P percent. With the discussion of the VaR model above, the fund manager must consider, and re-adjust the risk level when X is passed.

Figure 3.4 a normal distribution curve. (Körner, 1985, p 137, modified)
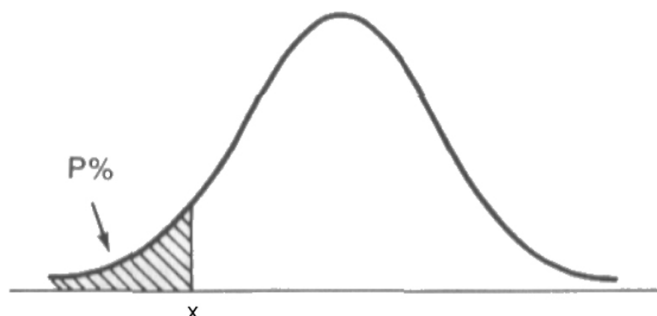
3.20 Exchange Rate Fluctuations

An investor in one country who decides to invest in another country must be aware that the relative value between the own currency and the foreign currency will probably change (Eng *et al.,* 1995). There are two things that the investor must keep in mind:

- *What triggers the change in the exchange rate between the two currencies?*
- *What will the future exchange rate be?*

Therefore, we are now to briefly discuss one common method to answer those questions called *Purchasing Power Parity* (PPP). Purchasing Power Parity is a model that explains how spot exchange rates tend to adjust to differences in inflation, keeping the prices of internationally traded goods equal in all countries. In reality, there are two versions of the PPP; *Absolute* and *Relative* PPP.

3.20.1 Absolute Purchasing Power Parity

The absolute PPP focus on the actual price level of one good traded in one country compared to another. If the good is then cheaper in one country, there is a possibility to buy it where it is cheaper and then move and sell it where it is more expensive. When the goods move into the cheaper country, there will be an interest in that country's currency and it will go up in relation to the more expensive country's currency. In reality, it is not possible to use the absolute PPP very often since the following criteria must be met:

- No transaction cost.
- No trade barriers.
- The good in the two places must be identical.

3.20.2 Relative Purchasing Power Parity

Since it is rare that these three criteria above are met, economists have developed the Relative PPP. This model determines the change in exchange rates over time, by focusing on the inflation in two countries. For example: the spot exchange rate between the SKr and the USD is SKr10/$. The inflation rate is expected to be ten percent in Sweden and zero in the USA. With an increasing inflation in Sweden, the price level will go up, which also means that the price for one dollar will rise with ten percent. The new exchange rate will then be SKr 10*1.1/$=SKr11/$.

On the other hand, if the USA will have an inflation of five percent, then we have to focus on the relative inflation rate between the two countries, which is five percent (10-5). The new exchange rate will thus be SKr10*1.05/$=SKr10.5/$. Ross then continues by stating that *"Relative PPP simply says that the expected percentage change in the exchange rate is equal to the difference in inflation rates"* (Ross *et al.*, 2006 p 718). As a result, an investor in Sweden who wants to invest in a foreign hedge fund most also estimate how the exchange rate between the two currencies will change. Let us say that a Swedish and a foreign hedge fund achieve the same yield. Then, if the inflation in Sweden is higher over the period than for the foreign country where the Swedish investor has invested, this will result in a higher return. Hence, in this case the return only depends on the value changes for the SKr versus the foreign currency.

3.21 Theory of Cognitive Dissonance - Decision Making

Since the concept of hedge funds is rather new, investors might not have a clear picture of what they really are all about and know their pros and cons. As mentioned, now days it is possible for an investor in Sweden to invest in Swedish hedge funds. This was not possible in the past, and Swedish investors then had to contact foreign fund managers and by themselves transfer capital to foreign hedge funds if they wanted to invest. Of course, this option is still available, and maybe even desirable. As already mentioned, Swedish registered hedge funds have to follow a stricter regulation than most other hedge funds. It is then rational to assume that foreign hedge funds will generate a higher compounded yield over the time that the investment lasts**.** But then, with liberal investment regulation, the risk level will also rise. The investor will have to ask himself: *"What investment option will give the best yield in relation to the given amount of risk?"* This leads to a problem were the investor must decide if to invest in Swedish or foreign hedge funds. There is a conflict between the two options, and the investor has to overcome the conflict before he can make the investment. The *Cognitive Dissonance Theory*, developed by the American psychologist Leon Festinger**,** will help the investor to make a more rational decision (Festinger, 1957).

Leon Festinger developed his theory in 1957 to explain how a person's ideas can change when they are in conflict with each other. The conflict that the person experience is unpleasant, as a result the person tries to find ways to reduce the level of unpleasantness caused by the conflicting ideas. According to Festinger, as the conflict increases,

persons become more motivated to alter their behaviour to resolve the conflict. Festinger states that a decision that is made will always result in dissonance. It does not mean that a chosen alternative is bad; it just means that the individual has eliminated other alternatives. Often, other alternatives are equally desirable as the one chosen, but the more different the alternatives are, the more dissonance the person will experience, and this is the core of Festinger's hypothesis. Figure 3.5 below shows an example where an individual is in a situation were he has to choose between two alternatives. The horizontal arrow represents the degree of dissonance. It states that when the experienced conflict is high, the direction will be towards the right, and if the conflict decreases, the direction will be to the left. The vertical arrow represents the differences between the two alternatives. The dotted lines indicate the maximum degree of internal conflict that a person can handle. The two other lines should never cross the dotted lines, since that will lead to more conflict than a person can deal with. If this happened, the person will reject the decision process.

Figure 3.5 an individual have to decide between two conflicting options, here investing in Swedish or foreign hedge funds.
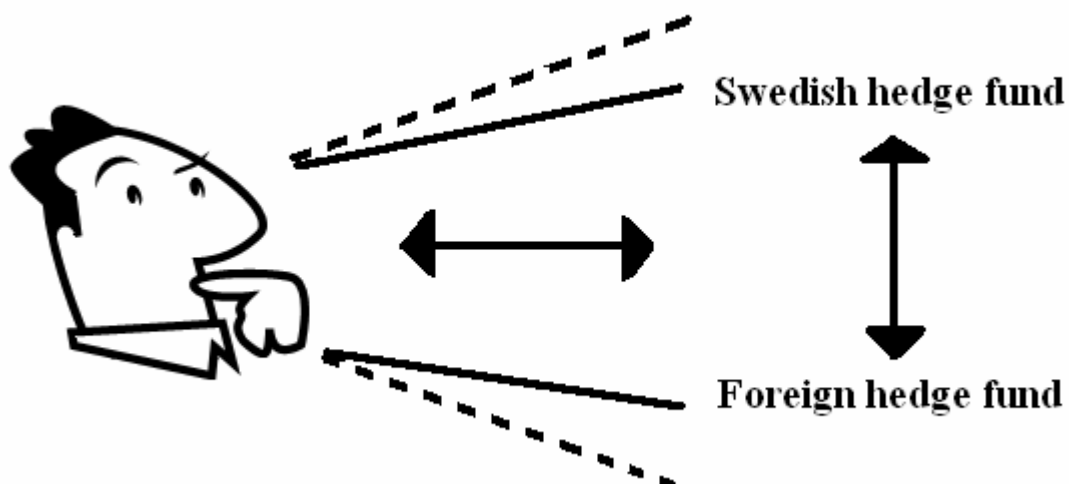
To make this theory more understandable we will describe the following scenario: We assume that an investor is in a situation where he has difficulties deciding about whether to invest in Swedish or foreign hedge funds. In this case, it will be a decision process between two alternatives with both pros and cons. The investor daily receives a lot of information about available investment options via different information channels, both

consciously and unconsciously, independent if the information is correct and/or important. For this reason, he can have a strong self awareness about how much he knows, but still, can not decide about what to invest in since Swedish and foreign hedge funds may have more or less the same advantages and disadvantages. We further assume that this investor in the end decides to invest in Swedish hedge funds. But we also assume, however, that he can not stop thinking about of investing in foreign hedge funds; he still has the positive aspects of foreign hedge funds and the negative aspects of the Swedish hedge funds. He will then struggle to make the chosen alternative, the Swedish hedge fund, less negative and more positive than before the decision took place. Through the cognitive process, the differences will then increase between the two alternatives. Thus, this investor will have a strong belief in his decision, despite the available information that may indicate something else.

Chapter 4

Statistical Methods, Measurements and Comparisons

In this chapter we will present the statistical methods that we will use to calculate and compare our data for the different hedge funds. Since it is unavoidable that there are discrepancies in the material, at least to a certain level, that we cannot control, will there be a short discussion about this subject.

4.1 Standard Deviation

For financial investments, the standard deviation is a measurement that determines how much the yield is fluctuating around an average return (Anderlind, 2003). The standard deviation is the squared root of the variance, which measures the average squared difference between the actual return and the average return. However, since the standard deviation is a standardized measure, it is easier to interpret it than the variance. It is as a result thereof used more frequently (Ross *et al*., 2006). A high standard deviation indicates that the volatility is high and that means that the investment should be viewed as more risky.

The Standard Deviation is calculated as:

$$\sigma = \sqrt{\frac{\sum (X - \mu)^2}{n - 1}}$$ (Kohler, 1994, p114)

Where

$\sum (X - \mu)^2$ is the sum of the squared deviations between each population specific value (X) and the population mean μ. N is the number of observations within the population.

4.2 Sharpe Ratio

The Sharpe Ratio is a technique to determine the risk adjusted return (Anderlind, 2003). It is defined as the yield above the risk free rate in relation to the standard deviation. A high Sharpe ratio is a sign than an investment has an attractive relation between yield and risk. As seen in the formula below, the risk free rate has a great impact on the

calculated ratio. This will result in low or negative Sharpe ratios for years when the risk free rate is higher than the expected return. Under these circumstances, government bonds will be a more attractive investment.

The formula to calculate the sharp ratio is defined as:

$$Sharperatio = \frac{\overline{r}_p - r_f}{\sigma_p}$$ (www.financial-dictionary.com)

were:

$\overline{r}_p$ is the mean expected return of the portfolio over the period.

r_f is the risk free rate.

σ_p is the portfolio's standard deviation over the period.

4.3 Spearman's Rank Correlation

Correlation describes how much the hedge fund is related to other financial instruments (Anderlind, 2003). The lower degree of correlation there is the better it is. In the case of hedge funds, that have an absolute goal, which is to earn money even when the market goes down, it is crucial that they are not correlated to other investments available. The correlation is a standardised measurement that makes it easy to compare the variables. The value is always between minus one and plus one, with absolute correlation at these extremes, and no correlation between the studied variables if the correlation is zero. Spearman's rank correlation is used to measure the correlation between two samples under nonparametric circumstances, and requires a minimum on an ordinal scale to be practised. In other words, it does not make any assumptions about the distribution of the variables (Siegel, 1956). In the dissertation, we will use the Spearman's rank correlation instead of the more common Pearson correlation. The reasons for this are that the Spearman's Correlation makes no assumptions according to the shape of the distribution and uses ranking instead of a nominal scale, and by that, limits the effect of extreme values in the material.

The Spearman's rank correlation is calculated as:

$$\rho = 1 - \frac{6\sum\limits_{i=1}^{N} d_i^{\,2}}{N^3 - N}$$ (Siegel, 1956, p204)

Were:

$\sum\limits_{i=1}^{N} d_i^{\,2}$ is the sum of the squared difference between the two ranks.

N is the number of subjects.

4.4 Skewness

Skewness is used to determine the symmetry of the distribution curve (Kohler, 1995). If it is uncertain if the curve is symmetric or not this test shows if there is an overweight in either direction. The degree of skewness has implications on the mean, mode and median. For example, with a positive skewness, a few high values raise the mean value considerably more than the medium value. Therefore, in a situation with a high degree of skewness, it could be more preferable to use the median value to get a fair result.

The most widely used method of skewness is the Pearson's coefficient of skewness. This measures the differences between the mode and the mean and relates this difference to the standard deviation. The standard deviation part is used to give the skewness a standardized value between minus three and plus three. At zero, the frequency curve is symmetric which means that the mean, median and mode match each other.

Pearson's coefficient of skewness for a population is calculated as:

$$Sk = \frac{3(Mean - Median)}{\sigma}$$ (Lind, Mason & Marchal, 2001, p118)

were:

Mean is the population mean.

Median is the population median.

σ is the populations standard deviation.

4.5 Mean Value

There are actually two ways to calculate the mean value depending on the method chosen: arithmetic and geometric mean (Ross *et al.*, 2006). Let us say that we want to measure how a hedge fund has been performing over a time period. With the arithmetic approach we look at the compounded annual percentage changes and with the geometric we calculate the entire compounded yield and divide this yield with the number of years. Ross et al clarifies the two methods:

• Geometric average return – "*What was your average compounded return per year over a particular period?*"

• Arithmetic average return – "*What was your return in an average year over a particular period?*"

(Ross *et al.*, 2006 p381)

They recommend that in a short perspective, up to a decade, the arithmetic approach will give the fairest result. It will suit our purpose in this dissertation to use the arithmetic return since it will give the best result.

The arithmetic mean for a population is calculated as:

$$\mu = \frac{\sum X}{N} \text{ (Kohler, 1994, p95)}$$

were:

$\sum X$ is the sum of all the observed values in the population.

N is number of all observations in the population.

μ is the arithmetic mean value for the population.

4.6 Mann-Whitney U Test

The Mann-Whitney U Test is a non-parametric test equivalent to the Wilcoxon Rank Sum Test. The reason to use this test is to determine if two populations that contain continuing values are either identical or significantly different from each others (Kohler, 1994). The Mann-Whitney U test does not assume the same shape of the distributions for the independent samples like for instance the parametric t-test does

(www.mlsc.lboro.ac.uk). The tested samples must as a minimum be of ordinal scale. The Mann Whitney U test is considered to be one of the strongest non-parametric tests and is also suitable for samples with small frequencies (Siegel, 1956). The ordinal scale has one great advantage when dealing with small samples since there is a possibility for extreme values to affect the material. To avoid this, the Mann-Whitney U Test is using ranking instead of nominal values. As a result, the effect of extreme values on small samples is reduced. Therefore we will us this test in this dissertation.

4.7 Statistics and Discrepancies

The information given about the performance of hedge funds from databases is never exactly correct (Finansiell Stabilitet, 2006:1). There are mainly three reasons for this, and we will briefly discuss them. We must state that there is nothing that the authors can do about these problems and we will use the collected data without any further modification.

4.7.1 Survivorship Bias

Databases only include hedge funds that are active at the moment. A hedge fund whose performance is poor will be terminated relatively fast; after one or two years. It has been estimated that five percent of all hedge funds are terminated each year due to poor performance. This leads to an indication that hedge funds generally achieve a higher yield than what actually is the case. The chief reason why hedge funds are terminated so fast has to do with so called "watermarks". Many hedge funds practice a performance based fee. The watermark rule implies that a hedge fund that has a negative return for a period, must first earn back this loss, and then the additional yield that makes up the threshold level before the investor has to pay the performance based fee. After a few periods of negative return it will get hard for the fund manager to earn a performance based fee from the investors, which means that it is easier to simply terminate the hedge fund and start over again with a new hedge fund.

4.7.2 Self Selection Bias

Fund managers report about their hedge funds performance on a voluntary basis. The purpose for reporting this is simply to market the hedge fund for investors. From this, it is obvious that people behind a hedge fund have incentives not to report data that makes the fund look bad. As a result, the total collected performance data available looks better than really is the case.

4.7.3 Back Filling Bias

This is created when a hedge fund is added to a database and the fund is asked to report data for previous years. If the fund has had periods of a mediocre yield, the owners of the fund do not want to hand this data over to the databases and instead only report a shorter historic performance data, which in total, gives the fund a better track record.

4.8 Risk Free Rate

The risk free rate is a fictive rate based on government bonds (Ross *et al.*, 2006). It is usually calculated as the average rate of return for three-month Government bonds over a 36 month period. To acquire a suitable rate for both the Swedish and foreign markets, we collected the rates from Swedish National Debt Office (www.rgk.se).

Chapter 5

Empirical Data

In this chapter we present the empirical findings that can be drawn from the collected data. First the focus will be on the volatility that determines the risk for a hedge fund. Then we move focus to financial performance, where the hedge funds are compared with well known statistical methods. At the end, the exchange rate fluctuation between the SKr and USD is also applied to the financial performance since it is of importance to be able to measure if it was better to invest in foreign hedge funds or not.

5.1 Standard Deviation for Return

In this first part the standard deviation which determines the volatility, that is the risk level, is presented. First, we present facts about the standard deviation in absolute terms and then, we try to find out if there are any correlation between the volatility between the Swedish and foreign hedge funds. Second, we try to find out if there are any significant differences between the volatility of the Swedish and foreign hedge funds.

5.1.1 Standard Deviation between Swedish and Foreign Hedge Funds

The standard deviation for the Swedish and foreign hedge funds markets are presented below in table 5.1. If we consider the accumulated values over the period, that are shown at the bottom of the table, the Swedish hedge funds have had a lower standard deviation in all hedging strategies except for the funds-of-funds.

In the market dependent strategy, the Swedish hedge funds have had a lower standard deviation in all but one of the periods. In 2002, the first year of the examined period, there is a big difference between the Swedish and foreign hedge funds, but this difference gets smaller over time. In 2004, the Swedish hedge funds seem to correlate more with the foreign ones.

For the multi-strategy, then, the standard deviation is higher for the Swedish hedge funds during the years between 2002 and 2004. From 2005 though, there was a change and the Swedish hedge funds showed a higher stability. One possible explanation for this could be that the number of hedge funds for the Swedish market have increased in

and thereby, reducing the effect of hedge funds with extreme values that distorts the collected data.

The standard deviation for the fund-of-funds strategy shows similarities with the market dependent strategy. There was a big difference in 2002 when the Swedish hedge funds showed more volatility. During 2003 and onwards, the Swedish hedge funds are less volatile and seem to correlate better with the foreign hedge funds.

For the tactical futures strategy, it is clear that the Swedish hedge funds are far less volatile than the foreign ones. One plausible explanation for this is that the foreign fund managers can operate under more laxity regarding the investment rules compared to their Swedish colleagues, and thereby, conducting more risky investments that cause a higher volatility for the foreign hedge funds.

Table 5.1 standard deviation for return

	Market Dependent		Multi-Strategy		Fund-of-Funds		Tactical Futures	
	Swedish	*Foreign*	*Swedish*	*Foreign*	*Swedish*	*Foreign*	*Swedish*	*Foreign*
2002	4.713	2.773	1.613	1.323	3.236	1.201	7.354	10.706
2003	1.290	3.454	2.589	1.177	0.635	1.159	3.164	6.634
2004	2.071	2.603	1.901	1.714	2.150	2.210	1.514	8.343
2005	1.226	1.910	1.166	2.436	0.983	1.406	0.631	7.320
2006	3.674	3.716	0.771	2.492	2.104	2.692	0.780	2.312
TOTAL	2.595	2.891	1.608	1.828	1.822	1.733	2.669	7.063

5.1.2 Correlation for Volatility between the Markets

In table 5.2 below the correlations between the Swedish and foreign markets are shown. For both the market dependent and tactical futures strategies we find the same correlation values. This means that the correlation is positive with a medium strong relationship between the Swedish and foreign markets.

The Swedish fund-of-funds strategy has the weakest correlation compared to the foreign counterpart

For the multi-strategy hedge funds the correlation is strongly negative between the Swedish and foreign hedge funds, a correlation of -0,900 in combinations with a

significance value below 5%. This means that there is a statistically proven significance that the Swedish hedge funds are negatively correlated to the foreign hedge funds, when the Swedish ones go down, the foreign ones go up, and vice versa.

Table 5.2 the correlation for volatility between Swedish and foreign hedge funds

	Correlation Coefficient	Significance
Market Dependent	0.500	0.391
Multi-Strategy	-0.900*	0.037
Fund-of-Funds	0.300	0.624
Tactical Futures	0.500	0.391

* indicates significant value

5.1.3 Mann-Whitney U test for Standard Deviation

Table 5.3 below shows significant differences for the standard deviation between the Swedish and foreign hedge funds. The mean rank and sum of mean rank, illustrates the rank distribution between the markets. From the table we can see that there is not any significant difference in any of the strategies since the significance values are over five percent for all the strategies. The fact that there is no significant difference according to the Mann-Whitney U test indicates that the strategies, under these circumstances have approximately the same risk when considering standard deviation.

Table 5.3 the Mann-Whitney U test for standard deviation

Measure	Mean Rank		Sum of Ranks		Asymp. Sig.
Strategy	Swedish	Foreign	Swedish	Foreign	
Market Dependent	5	6	25	30	0.602
Multi-Strategy	5	6	25	30	0.602
Fund-of-Funds	5.20	5.80	26	29	0.754
Tactical Futures	3.80	7.20	19	36	0.076

5.2 Mean Values

In this section the mean values for the different hedge fund strategies are presented on an annual and total basis. It is crucial to be aware that the values have been calculated with the arithmetical technique (more about this in chapter four). First, we examine the mean values for the different hedge fund strategies. Then, it is necessary to determine if the material is normally distributed or not. To check this, we use a skewness test. The mean value test continues with an examination of the level of correlation between the

Swedish and foreign hedge funds. Finally, we examine to see if there are any significant differences between the Swedish and foreign hedge funds concerning the mean.

5.2.1 Mean Values for Return

In table 5.4 below, we can see that there are some indicators saying that the Swedish hedge funds have had a higher mean return on average over the examined period in three of the four strategies. It is only in the multi-strategy segment were the Swedish hedge funds have had a lower mean return. In this case, a high mean value of return will be interpreted as more preferable, and therefore, the Swedish hedge funds are performing better than the foreign counterparts in all strategies except for the multi-strategy. A plausible reason for this is that the Swedish hedge funds must follow a stricter regulation that keeps the risk level low. Especially the second article in the "Lag om Investeringsfonder," makes it hard for fund managers to change the investment strategy for Swedish hedge funds.

Table 5.4 the mean values for return.

	Market Dependent		Multi-Strategy		Fund-of-Funds		Tactical Futures	
	Swedish	*Foreign*	*Swedish*	*Foreign*	*Swedish*	*Foreign*	*Swedish*	*Foreign*
2002	4.025	-1.175	1.848	1.550	2.750	0.268	0.300	3.060
2003	2.000	4.378	3.148	3.570	2.245	2.448	2.938	2.635
2004	1.453	2.383	1.693	1.843	1.615	1.735	2.938	0.138
2005	2.775	2.160	1.798	1.855	1.825	1.588	2.143	2.370
2006	1.103	1.770	0.627	2.720	0.193	1.413	1.957	1.637
TOTAL	2.271	1.903	1.823	2.308	1.726	1.490	2.055	1.968

5.2.2 Skewness for Mean Value

As mentioned in chapter four, skewness is used to determine the symmetry of a frequency curve. Table 5.5 below shows that the total markets, all strategies together, are almost symmetric. Starting with the foreign hedge funds, the market dependent and tactical future strategies have an almost symmetric normal distribution curve while the multi-strategy and fund-of-funds have a slightly positive skewness which means that the mean value will be higher than the median. The implications of this are that there might be more extreme values in the distribution than in a symmetric curve. In this case, the result will be a slightly higher mean values that may give an advantage when comparing the values.

For the Swedish market then, the fund-of-funds strategy shows a slight tendency towards positive skewness. Both the market-dependent and multi-strategy hedge funds indicate a moderate positive skewness. The Tactical future strategy has a moderate negative skewness. A positive skewness results in a higher mean value than if the distribution curve would have been symmetric and vice versa if the skewness is negative. For the dissertation this implicates that, as mentioned above, a positive skewness might result in an advantage and a negative skewness might result in a less favourable situation when comparing unless the two compared elements have the same skewness.

Table 5.5 the skewness for mean value

	Swedish	Foreign
Strategy		
Market Dependent	1.165	-0.011
Multi-Strategy	1.215	0.295
Fund-of-Funds	0.372	0.288
Tactical Futures	-1.31	-0.023
Total Market	0.39	0.25

5.2.3 Correlations for Yield between the Markets

For all the strategies in table 5.6 below, we find low or no correlation between the Swedish and foreign hedge fund strategies. For all segments, the significance value is over five percent which means that there exists no linear relationship between the examined markets. In other words, Swedish and foreign hedge funds are not correlated to each other concerning yield.

Table 5.6 the correlation for yield between the Swedish and foreign markets on an annual basis.

	Correlation Coefficient	Significance
Market Dependent	0.373	0.116
Multi-Strategy	0.372	0.117
Fund-of-Funds	0.337	0.158
Tactical Futures	-0.028	0.914

5.2.4 Mann-Whitney U Test for Yield over the Period

According to the presented data in table 5.7, there are no significant differences between the markets in any of the four strategies examined. This means that there are no indications, according to Mann-Whitney U test, of differences in yield generated over

the studied period. In other words, the Swedish and foreign hedge funds achieve the same yield.

Table 5.7 the results for Mann-Whitney U test for yield over time

Measure	Mean Rank		Sum of Ranks		Asymp. Sig.
Strategy	Swedish	Foreign	Swedish	Foreign	
Market Dependent	19.84	19.16	377	364	0.849
Multi-Strategy	17.97	21.03	341.50	399.50	0.397
Fund-of-Funds	20.24	18.76	384.50	356.50	0.683
Tactical Futures	17	18	289	306	0.770

5.3 Financial Performance

This part is about the financial performance for the different hedge funds divided per investment strategy. We are mainly focusing on the Sharpe ratio that is the yield over the risk free yield and the absolute return. For a longer discussion about these measurements, please see chapter three and four.

5.3.1 Sharpe Ratio

To be able to make comparisons between the Swedish and foreign hedge funds concerning the Sharpe ratio, we must use the risk free rate to determine if the yield created is propionate to the given level of risk.

Since we are writing this dissertation from a Swedish investors perspective, we therefore only use the Swedish risk free rate to calculate the Sharpe ratio both for the Swedish and foreign hedge funds. The calculated values for the risk free rate are presented in the appendix. Below are the results of the Sharpe ratios divided per investment strategy over the examined period together with comments.

5.3.1.1 Market Dependent

As shown in table 5.8 below, the foreign hedge funds have had stronger Sharpe ratios than the Swedish ones for three of the five examined years. However, the Swedish hedge funds have had a better ratio when considering the whole examined period. The reason for this result has most likely to do with the higher total mean and lower standard deviation that is found on a yearly basis that are presented in the tables 5.4 and 5.1.

Table 5.8 the Sharpe ratio for market dependent hedge funds

Market Dependent

	Swedish	Foreign
2002	0.244	-1.461
2003	-0.561	0.479
2004	-0.606	-0.125
2005	0.420	-0.052
2006	-0.254	-0.072
Totalt	-0.091	-0.046

5.3.1.2 Multi-Strategy

In table 5.9 below we can se that the foreign hedge funds outperform the Swedish hedge funds. The reason for this can easily be identified if we consider the mean values for return and standard deviation, as mentioned above, where the foreign hedge funds over a majority of the years have had a stronger mean return and lower standard deviation, both in relative and absolute terms. As all ready mentioned, the Swedish hedge funds must follow a sterner regulation and can not therefore easily chance strategy since they must keep the risk level on a constant basis, and this will probably make it more cumbersome for the Swedish fund managers to act.

Table 5.9 the Sharpe ratios for the multi-strategy

Multi-Strategy

	Swedish	Foreign
2002	-0.638	0.079
2003	0.164	0.879
2004	-0.534	0.048
2005	-0.396	-0.257
2006	-1.829	0.112
Totalt	-0.133	0.040

5.3.1.3 Fund-of-Funds

For the fund-of-funds strategy, table 5.10 below shows that the foreign hedge funds have performed a higher Sharpe Ratio than the Swedish hedge funds have done for three of the five years. In total though, the Swedish hedge funds have shown better values.

Table 5.10 the Sharpe Ratio for fund-of-funds

Fund-of-Funds

	Swedish	Foreign
2002	-0.039	-2.173
2003	-0.754	-0.238
2004	-0.508	-0.440
2005	-0.442	-0.478
2006	-0.876	-0.231
Totalt	-0.171	-0.315

5.3.1.4 Tactical Futures

For the tactical futures strategy that is displayed in table 5.11 below, we can see that the Swedish hedge funds have performed better in three out of the five examined years. Also, when it comes to the total value, the Swedish hedge funds have performed slightly better.

Table 5.11 the Sharpe ratio for tactical futures

Tactical Futures

	Swedish	Foreign
2002	-0.350	0.017
2003	0.068	-0.013
2004	0.152	-0.308
2005	-0.185	0.015
2006	-0.102	-0.173
Totalt	0.007	-0.010

5.3.1.5 Comments about the Sharpe Ratio

It is worth mentioning that none of the strategies examined, when we focus on the accumulated values, performs well enough to be considered as meaningful investments. But then, the Sharpe rations that we have examined are accumulated values for entire hedge funds strategies, which mean that there are many hedge funds within each segment. As a result, there are individual hedge funds that both rise and lower the mean values. As a result, it might be hard to put too much of focus on the Sharpe ratio.

5.3.2 Absolute Return

Table 5.12 performance comparison for absolute return

Strategy	Name of Fund	2001	2002	2003	2004	2005	10-2006	Avg. Return	Acc. Return	Absolute
M*	Banco Hedge	6.90	-5.50	-0.70	-1.70	9.50	7.60	2.68	16.10	No
M*	Lancelot Excalibur	3.27	5.18	12.01	9.64	1.20	2.34	5.61	33.64	Yes
M*	Lynx	12.10	21.80	34.60	13.30	7.30	1.40	15.08	90.50	Yes
M*	Tanglin	34.05	2.23	10.43	14.50	1.40	3.95	11.09	66.56	Yes
MD**	Cicero Hedge	12.60	-1.70	-4.00	0.90	6.40	1.10	2.55	15.30	No
MD**	HB Aktie Europa		3.00	-3.10	4.60	3.30	1.30	1.82	9.10	No
MD**	Lancelot Merlin	18.12	11.31	-6.91	-0.39	3.80	4.61	5.09	30.54	No
M*	Muti-Strategy		6.20	14.28	7.37	7.42	8.16	8.69	43.43	Yes
MD**	Long/Short		-4.70	17.51	9.53	8.64	5.31	7.26	36.29	No

* Multi-Strategy
** Market Dependent

To be considered as having accomplished an absolute return the hedge funds must have had a positive yield in all years over the examined period.

Three of the four Swedish multi-strategy hedge funds presented here have reached this goal. If we consider them as a whole group, the overall absolute return will be positive. This is also the case for the foreign hedge funds within the same strategy.

As for the Market Dependent strategy, then, none of the three Swedish hedge funds have reached their goal of an absolute return. This is also the case for the foreign hedge funds within this segment. One plausible reason for this result is that the market dependent hedge funds are more correlated to the market, and might therefore suffer more when the market goes down.

5.3.3 Exchange Rate Fluctuations

Figure 5.1 below show how the exchange rate has changed between the SKr and the USD over the examined period. As we can se, the SKr has appreciated versus the dollar with almost two SKr, which means that it has been favourable to have had investments in SKr.

Figure 5.1 the exchange rate between the SKr and USD (European Terms)
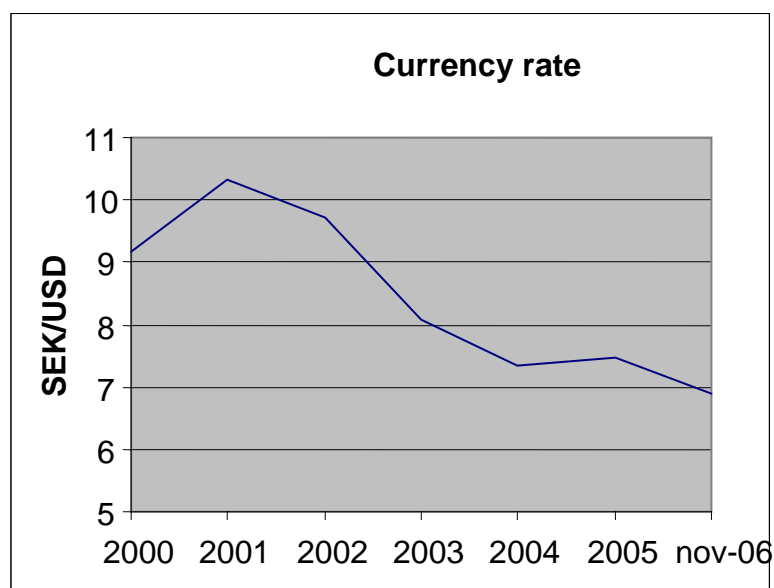
If we then consider how this appreciation of the SKr has affected the investment in the different hedge funds we get the following results:

5.3.3.1 Market Dependent

For the market dependent hedge strategy, which is presented in table 5.13 below we can see that without involving the exchange rate fluctuations, the Swedish hedge funds have had performed better, with almost two percent. Then, if we consider the exchange rate fluctuations, the result becomes more obvious with a negative yield for the foreign hedge funds with eleven percent. In total, there is a spread between the Swedish and foreign hedge funds with of 22.5 percent over the period that clearly shows that the Swedish hedge funds have been a better investment.

Table 5.13 fluctuations for market dependent strategy

	Market Dependent		
	Swedish	**Foreign**	**Foreign with fluctuations**
2002	4.03%	-1.18%	10.10%
2003	2.00%	4.38%	-12.43%
2004	1.45%	2.38%	-6.77%
2005	2.78%	2.16%	3.90%
2006	1.03%	1.77%	-5.97%
Acc:	**11.29%**	**9.52%**	**-11.17%**

5.3.3.2 Multi-Strategy

When focusing on the multi-strategy segment which is presented in table 5.14 below, the foreign hedge funds have beaten the Swedish ones with a little more than two percent. However, when applying the exchange rate fluctuations, the result is in favour for the Swedish hedge funds, since they are the only ones that then show positive values. The spread between the Swedish and foreign hedge funds are 18 percent in favour for the Swedish hedge funds.

Table 5.14 fluctuations for multi-strategy

	Multi-Strategy		
	Swedish	Foreign	Foreign with fluctuations
2002	1,85%	1,55%	12,83%
2003	3,15%	3,57%	-13,24%
2004	1,69%	1,84%	-7,31%
2005	1,80%	1,86%	3,60%
2006	0,63%	2,72%	-5,02%
Acc:	**9,11%**	**11,54%**	**-9,14%**

5.3.3.3 Fund-of-Funds

In the fund-of-funds segment which is presented in table 5.15 below, the Swedish hedge funds have barely performed better compared to the foreign hedge funds, about one percent. When applying the exchange rate fluctuation, the result becomes more in favour for the Swedish hedge funds since the spread then is almost 22 percent in favour for the Swedish hedge funds.

Table 5.15 fluctuations for fund-of-funds

	Fund-of-funds		
	Swedish	Foreign	Foreign with fluctuations
2002	2.75%	0.27%	11.55%
2003	2.25%	2.45%	-14.36%
2004	1.62%	1.74%	-7.41%
2005	1.83%	1.59%	3.33%
2006	0.19%	1.41%	-6.33%
Acc:	**8.64%**	**7.46%**	**-13.22%**

5.3.3.4 Tactical Futures

For the tactical futures segment which is presented in table 5.16 below, we can see that both the Swedish and foreign hedge funds have accomplished almost the same return of ten percent. Then, when the exchange rate fluctuation is applied, the spread is 21 percent in favour for the Swedish hedge funds.

Table 5.16 fluctuations for tactical futures

	Tactical Futures		
	Swedish	Foreign	Foreign with fluctuations
2002	0.03%	3.06%	14.34%
2003	2.94%	2.64%	-14.17%
2004	2.94%	0.14%	-9.01%
2005	2.14%	2.37%	4.11%
2006	1.96%	1.64%	-6.10%
Acc:	10.01%	9.85%	-10.83%

Chapter 6

Analyses

This chapter presents the analysis of the previous made hypotheses about volatility, yield, absolute return, Sharpe ratio, correlation, skewness and the effect of exchange rate fluctuations between the SKr and USD.

6.1 Analyse of Hypotheses

The main theory throughout this dissertation is Leon Festinger's Cognitive Dissonance Theory. It is applied to the different hypotheses and the results from the empirical chapter will help us to tell if the tension that a Swedish investor might feel when having to chose between investing in Swedish or foreign hedge funds will be reduced or not. Notice, we assume that the investor will experience differences between Swedish and foreign hedge funds at the beginning.

Hypothesis 1: Swedish hedge funds show a lower volatility than foreign hedge funds

For the first hypothesis, the estimates from the empirical chapter indicate that in absolute numbers, the Swedish hedge funds have indeed showed a lower volatility except for the fund-of-funds strategy. However, the Mann-Whitney U test reveals that there is no significant difference between the Swedish and foreign hedge funds in any of the strategies. Therefore, when using the theory of cognitive dissonance, the investors' conflict about investing in Swedish or foreign hedge funds will neither be reduced nor increased. As a result, the hypothesis will be rejected.

Hypothesis 2: Swedish hedge funds will show a lower yield compared to foreign hedge funds

For the second hypothesis, the estimates that can be drawn from the previous chapter indicate that the Swedish hedge funds perform better in absolute numbers than the foreign hedge funds for all strategies except the multi-strategy. However, the Mann-Whitney U test does not support any significant differences between the Swedish and foreign hedge funds. Therefore, the dissonance that the investor might feel can not be reduced, and therefore, the hypothesis is rejected.

Hypothesis 3: Swedish hedge funds will more likely show absolute return

Here we are only focusing on two hedge fund categories because there are a limited number of hedge funds for the Swedish market. For the third hypothesis, the result from the empirical chapter shows that there is no difference between the Swedish and foreign hedge funds when it comes to result an absolute yield. This result can then not reduce the dissonance experienced by our investor and, therefore, the hypothesis is rejected.

Hypothesis 4: Swedish hedge funds will have a higher Sharpe ratio than the foreign hedge funds

For the forth hypothesis, the estimates from the previous chapter indicate that for two of the four strategies, the fund-of-funds and tactical futures, the Swedish hedge funds have accomplished a higher Sharpe ratio than the foreign hedge funds have done when considering the entire examined period. For the two other strategies, market dependent and multi, the foreign hedge funds have accomplished a higher Sharpe ratio. However, the results between the Swedish and foreign hedge funds does not signify any differences between the markets, and then, the dissonance that the investor feel, can not be reduced. Therefore, the hypothesis is rejected.

Hypothesis 5: There will be no correlation between Swedish and foreign hedge funds concerning volatility

The estimated results in the previous chapter show that there is no correlation for three of the four groups. However, for the multi-strategy segment, there is a significant negative correlation that is strong. This negative correlation tell us that the Swedish and foreign hedge funds will go in different directions. When focusing on the level of dissonance then, the lack of correlation between three of the four segments will result in a reduction of dissonance. But, since the multi-strategy is negatively correlated, that will instead increase the level of dissonance, but only for this segment. To answer the hypothesis, it is not rejected; accept for the multi-strategy, were it is rejected.

Hypothesis 6: There will be no correlation between the Swedish and foreign hedge funds concerning yield

The estimates from the previous chapter indicate that there is no correlation between the Swedish and foreign hedge funds concerning yield. The lack of significance is coherent

with our hypothesis and result in a decreased dissonance. Therefore, the stated hypothesis is not rejected.

Hypothesis 7: The performance data for all the markets has been symmetric

From the previous empirical chapter, the estimated results indicate that two of the hedge funds segments in Sweden, market-dependent and multi-strategy have a moderate positive skewness. There is also a slightly positive skewness for fund-of-funds and a moderate negative skewness for tactical futures. This will increase the level of dissonance experienced by the investor. And therefore, the hypothesis is rejected.

For the foreign hedge funds then, both the market-dependent and tactical futures show almost no skewness at all. Both the multi- and fund-of-funds strategy indicates a minor skewness. The implications on the theory give support for the hypothesis. The experienced level of dissonance will be reduced. The hypothesis as a result not rejected.

As for final comments for this hypothesis, it is clear that the data collected from the foreign hedge fund markets show skewness which means that it is not characterized by containing extreme values affecting the shape of the distribution. On the other hand, the collected data from the Swedish hedge fund market point toward a moderate skewness in the material. That indicates the existence of extreme values that affect the shape of the distribution leading to a shift in the mean but not in the median. To limit the effect of this potential problem, as mentioned in chapter four, the Mann-Whitney U test and Spearman's Rank Correlation are used in the dissertation because the use an ordinal scale that don't consider the individual observations in numerical terms but rank them from the lowest to the highest, and by that, limited the effect of these extreme values. Therefore, this moderate level of skewness has minor implications for the result.

Hypothesis 8: The exchange rate fluctuation between the SKr and USD will make it more favourable for a Swedish investor to invest in Swedish hedge funds

From the empirical chapter, the estimated results indicates that for all four foreign hedge fund strategies, the real return over the period, also including currency fluctuations, will be less than the initial value if an investor in Sweden had invested in any of the segments at the beginning of the examined period. Over the same period, the result for the Swedish hedge funds has been similar as for their foreign counterparts, but here, the

currency fluctuation has no impact. Therefore, it would have been more favorable for a Swedish investor to have had invested in Swedish hedge funds. The outcome of this hypothesis is that the level of dissonance will decrease, and therefore, the hypothesis is not rejected.

6.2 Comments to the Hypotheses

The estimated result for hypothesis number three is based on the indexes shown in table 5.11 and not on individual hedge funds.

For the fourth hypothesis, the Sharpe ratios that are relevant to the outcome are the total ratios over the examined period and not those from compounded yearly observations.

For the seventh hypothesis, the threshold values have been set between -0.3 to 0.3. Values below this range is negatively skewed and if the value is above, there is a positive skewness.

Chapter 7

Conclusion

In this chapter we present the conclusions of our research questions that can be drawn based on the hypotheses. We then present how the conclusions can be of help for investors. Since there are problems with the limited number of hedge funds registered in Sweden, the chapter ends with suggestions for further research.

7.1 Summary of Dissertation

Our perspective for writing this dissertation was that we assumed that there were differences in performance for Swedish hedge funds if they are compared to foreign hedge funds. We especially assumed that Swedish hedge funds will show a lower level of risk because of the heavier regulation that Swedish fund managers have to follow. The focus in this dissertation is from Swedish investors' point of view and the fact that they might encounter problems when having to decide about investing in Swedish or foreign hedge funds, there might then be a conflict about the two alternatives. This conflict, or dissonance as it is called by Leon Festinger, is the foundation that we use to answer the research questions whether our findings will reduce or increase the dissonance for the individual investor.

To be able to tell how the Swedish hedge funds have performed compared to the foreign ones we have formed four research questions about:

- the level of risk
- yield
- financial performance and correlation
- the effect of currency fluctuations between the SKr and the USD.

To be able to answer the research questions, we then formed eight hypotheses about how we believed that the Swedish hedge funds have performed over the examined period in comparison with the foreign hedge funds. These hypotheses are based on the fact that fund managers, operating hedge funds registered in Sweden, must follow a stricter regulation compared to their foreign colleagues.

To be able to answer the hypotheses, secondary data mainly concerning the yield has been collected for all the examined hedge funds. This data has then been processed via statistical methods so that it can tell if the stated hypothesis is valid or not.

7.2 Summary of the Findings

7.2.1 Research Question 1:
When focusing on fluctuation, which determines the risk level in a hedge fund, how have the Swedish hedge funds performed compared to the foreign hedge funds?

To answer this question we must use the two hypotheses concerning volatility: *Swedish hedge funds show a lower volatility than foreign hedge funds* and *there will be no correlation between Swedish and foreign hedge funds concerning volatility*.

The result for the first hypothesis shows with support from the empirical chapter that the dissonance will not be reduced which means that this hypothesis is rejected.

For the second hypothesis, we have found support for three of the four examined strategies that there have not been any correlation; the hypothesis in not rejected for any hedging strategy except for the multi segment.

This means that the result for the first hypothesis say that there is no distinct difference between the Swedish and foreign hedge funds. The second hypothesis then, suggests that the markets are not correlated to each other. As a result, we can claim that the Swedish hedge funds have shown the same amount of risk as the foreign hedge funds and that the Swedish and foreign hedge funds have had this risk level independent of each others.

7.2.2 Research Question 2:
Is there any difference in the yield for Swedish and foreign hedge funds?

As with the first research question, the answer here is within the two hypotheses stating that: *Swedish hedge funds will show a lower yield compared to foreign hedge funds* and th*ere will be no correlation between the Swedish and foreign hedge funds concerning yield*.

For the first hypothesis, it is clear that there are no significant differences between the Swedish and foreign hedge funds which in turn implicate through the theory of cognitive dissonance that it will not be decreased and therefore, the hypothesis can not be found valid. For the second hypothesis then, the estimated result implicates a support for it resulting in lowered dissonance.

For the research question, the first hypothesis indicates that the markets do not show any differences in the ability to attain a yield. For the second hypothesis, it indicates that the Swedish and foreign hedge funds perform independently from each other. In other words, there are no correlations between Swedish and foreign hedge funds concerning yield. Hence, the hedge funds will still deliver the same return.

7.2.3 Research Question 3:

RQ3: When considering financial performance, how do Swedish and foreign hedge funds perform compared to each other?

Two hypotheses will be used to answer this question. First, *Swedish hedge funds will more likely show absolute return* and *Swedish hedge funds will have a higher Sharpe ratio than the foreign hedge funds.*

The result for the first hypothesis concerning absolute return, leads to the rejection of this hypothesis since the data did not indicate any differences. For the second hypothesis about the Sharpe ratio, it was also rejected because the difference between the observations was very small. From this, we can come to the conclusion that there have not been any major differences between the Swedish and foreign hedge funds concerning the financial performance.

7.2.4 Research Question 4:

RQ4: When applying the currency fluctuation between the SKr and the USD to the yield, will it then be more favorable to invest in Swedish hedge funds?

One hypothesis is used to answer this question: *The exchange rate fluctuation between the SKr and USD will make it more favourable for a Swedish investor to invest in Swedish hedge funds.* From the estimates in chapter five, this statement is correct since

there has been a depreciation of the USD relative the SKr. As a result, the hypothesis is not rejected.

For an investor in Sweden that have been considering in investing abroad, the depreciation of the USD to the SKr has led to a decreased portfolio value with almost 30 percent. So even if some foreign hedge funds have had performed better, the declining value of the USD has been resulting in an overall less favourable yield if the investor invested abroad.

7.2.5 Overall Conclusion

If we consider the answers for the above stated research questions, we can not from an over all view say that there are any significant differences between the examined Swedish hedge funds market if they are compared to the same markets for foreign hedge funds. However, since the data is presented in an ordinal scale that limits the differences in absolute terms, due to the results from the seventh hypothesis that states that the performance data for all the markets has not been symmetric, that implicates extreme values in the material. This means that the data shows a consistent pattern that the Swedish hedge funds are performing on a higher level, but not high enough, to implement a significant difference with the measures being used

The only significant difference we get concerning yield is when we apply the exchange rate fluctuations. However, this is out of the control of the fund manger, but must still be considered by an investor who is considering investing abroad. Even if the SKr has been appreciated towards the USD over the examined period, this goes in cycles, and therefore, the opposite will probably be true as well in the future. And then, it will be more favourable to have investments based in dollar.

7.3 Practical Implications

The concept of hedge funds is new and it is an interesting way for investing. However, it is still seen as more risk full compared to more "traditional" investment and as a result, an investor might be uncertain whether to invest or not. In the past, before Sweden allowed hedge funds, investors in Sweden had to move their capital to foreign hedge funds to be able to invest. This is no longer the case, but might still be desirable since hedge funds registered in Sweden have to follow stricter regulation concerning

investment policy and therefore, it might be harder to comply with the goal of reaching an absolute return. On the other hand, a loose regulation concerning the investment policy will, at least in theory, lead to more volatility in the yield.

In this dissertation, we focused on the volatility and ability to achieve yield for Swedish and foreign hedge funds and tried to determine if there were any differences between them. This will be of interest for an investor with no or limited knowledge about hedge funds, or some one who is considering to investing abroad about how to proceed. *"To invest or not invest, that is the question!"*.

7.4 Future Research

Since this dissertation only deals with a narrow approach concerning hedge funds, and that there are so much more that can be done to scatter the clouds around the rather new phenomenon of hedge funds, we hereby provide the following suggestions for further research that can enhance the knowledge for investors and fund managers:

- Our analysis in this dissertation has been done with data collected from a short period of time. During this period, the currency fluctuation has been in favour for the SKr, which means that it would have been wiser to have invested in Swedish hedge funds. The result would probably be different if the period had been longer. It is well known that currencies appreciate and depreciate against each other over time. By collecting currency fluctuations over a longer period, were no currency is favoured, will enhance the acutance. The data concerning the hedge funds performance will, as well, gain in acutance if the observed periods are longer. Therefore, to make the same research again in a couple of years, will, *ceteris paribus*, give more accurate findings.

- As discussed in chapter three, hedge funds primarily depend on their fund manager's skill to achieve a yield, which is called the *alpha value*. It would be of interest to examine how Swedish hedge fund managers' conduct in this area compared to their foreign colleagues, since the Swedish managers must follow a stricter regulation to protect the investors from risk.

- If the scale of the collected data is changed from an ordinal to a nominal scale, this will probably give the findings more acutance. This is because that using an ordinal

scale might affect the results because this changes the material from a ranking system, giving individual observations a more accurate value under some circumstances.

- Finally, to conduct a case study at one or a few hedge funds managers, concerning what criteria are being used to construct the portfolio of the hedge fund and how this correlate to the risk level should be an interesting approach.

References

Books:

Anderlind, P. (2003). *Hedgefonder*. Sweden: Academia adacta AB.

Ross, S., Westerfield, R. & Jordan, B. (2006). *Corporate Finance Fundamentals*. 7th ed. U.S.A.: McGraw-Hill International Edition.

Igelström, B. (2004). Att Styra och Mäta Värdeskapande. Sweden: Xantro Förlag.

Eng, M. (1995). *Global Finance*. HarperCollins College Publishers. 1st ed.

Gregow, T. (2005). *Sveriges Rikes Lag 2005 (blå lagboken)*. Norstedts Juridik AB.

Saunders, M., Lewis, P. & Thornhill, A. (2007). *Research Methods for Business Students*. 4th ed. England: Prentice Hall.

Festinger, Leon. (1957). *A Theory of Cognitive Dissonance*. U.S.A. Row, Peterson and Company.

Bernhardsson, J. (2005). *Investerarnas Upplsagsbok*. Kristianstad. 1:1 ed.

Lundahl. U & Skärvad. P. *Utredningsmetodik för samhällsvetare och ekonomer*, Studentlitteratur. 3th ed.

Finansinspektionen. (2005). *Handbok for the Fundmarket*.

Simmons & Simmons. (2005). *Hedge Funds in France: New Developments*.

Körner, S. (1985). *Statistisk Slutledning*. Sweden: Studentlitteratur.

Kohler, H. (1996). *Statistics for Business and Economics*. 6th ed. U.S.A.: Harper Collins College Publishers

Lind, D., Mason, R. & Marchal, W. (2001). *Statistical Techniques in Business and Economics*. 11th ed. U.S.A.: McGraw-Hill

Siegel, S. (1956). *Nonparametric Statistics for the Behavioral Sciences*. U.S.A.: McGraw-Hill

Oxford English Reference Dictionary. (2002). 2nd ed.

Hull, John.(2002). *Fundamentals of Futures and Options Markets*. U.S.A.: Pearson Education, Prentice Hall

Official Statistics of Sweden. (2006). *Statistical Yearbook of Sweden 2006.* Volume 92. Sweden: Publication Services

Articles:

Hedge Fonder och Det Finansiella Systemet (2006)

Sveriges Riksbank. (2006*). Financial Stability, 1/2006*

Walter, P. & Krause, P. (1999). Hedgefonder – orosstiftare?, *Penning- och Valutapolitik* 1/1999.

Internet:

"Riksbanken Gillar Hedgefonder Men Varnar för Kollapser.", 2006, read 24/11/2006, http://www.di.se/Nyheter/

Hedgeindex, Credit Suisse & Tremont, read 13/11/2006, http://www.hedgeindex.com/hedgeindex/en/default.aspx?cy=USD

Centre for International Securities and Derivates Markets, read 13/11/2006, http://cisdm.som.umass.edu/

Morningstar, read 13/11/2006, http://www.morningstar.se/

Riskgälds Kontoret, read 15/11/2006, http://www.rgk.se/

OMX the Nordic Exchange, read 16/11/2006, http://omxgroup.com/nordicexchange

Investopedia, read 22/11/2006, http://www.investopedia.com/

Federal Reserve, read 23/11/2006, http://www.federalreserve.gov/

Financial Dictionry, read 25/11/2006, http://www.financialdictionary.com/

Center for Social Research Methods, read 25/11/2006,

http://www.socialresearchmethods.net/tutorial/Colosi/lcolosi2.htm

Appendix

Appendix A
- Collected quantitative data -

All data is calculated in SPSS 12 except for the raw data concerning the return, risk free rate, Sharpe ratio and currency which is done in Excel.

Mean values and standard deviations

Market Dependent

År		Mean value onshore	Mean value offshore
2002	Mean	4,0250	-1,1750
	N	4	4
	Std. Deviation	4,71339	2,77280
2003	Mean	2,0000	4,3775
	N	4	4
	Std. Deviation	1,29019	3,45358
2004	Mean	1,4525	2,3825
	N	4	4
	Std. Deviation	2,07092	2,60326
2005	Mean	2,7750	2,1600
	N	4	4
	Std. Deviation	1,22642	1,91010
2006	Mean	1,1033	1,7700
	N	3	3
	Std. Deviation	3,67371	3,71566
Total	Mean	2,3326	1,9100
	N	19	19
	Std. Deviation	2,75203	3,17421

Multi-Strategy

År		Mean value onshore	Mean value offshore
2002	Mean	1,8475	1,5500
	N	4	4
	Std. Deviation	1,61279	1,32308
2003	Mean	3,1475	3,5700
	N	4	4
	Std. Deviation	2,58911	1,17680
2004	Mean	1,6925	1,8425
	N	4	4
	Std. Deviation	1,90074	1,71391
2005	Mean	1,7975	1,8550
	N	4	4
	Std. Deviation	1,16597	2,43569
2006	Mean	,6267	2,7200
	N	3	3
	Std. Deviation	,77054	2,49237
Total	Mean	1,8853	2,2858
	N	19	19
	Std. Deviation	1,75323	1,81501

Fund of Funds

År		Mean value onshore	Mean value offshore
2002	Mean	2,7500	,2675
	N	4	4
	Std. Deviation	3,23574	1,20070
2003	Mean	2,2450	2,4475
	N	4	4
	Std. Deviation	,63464	1,15895
2004	Mean	1,6150	1,7350
	N	4	4
	Std. Deviation	2,15019	2,20980
2005	Mean	1,8250	1,5875
	N	4	4
	Std. Deviation	,98284	1,40614
2006	Mean	,1933	1,4133
	N	3	3
	Std. Deviation	2,10241	2,69188
Total	Mean	1,8063	1,4942
	N	19	19
	Std. Deviation	1,97921	1,72190

Tactical Futures

År		Mean value onshore	Mean value offshore
2002	Mean	,3000	3,0600
	N	2	2
	Std. Deviation	7,35391	10,70560
2003	Mean	2,9375	5,6350
	N	4	4
	Std. Deviation	3,16369	6,63364
2004	Mean	2,9375	,1375
	N	4	4
	Std. Deviation	1,51403	8,34286
2005	Mean	2,1425	2,3700
	N	4	4
	Std. Deviation	,63126	7,31955
2006	Mean	1,9567	1,6367
	N	3	3
	Std. Deviation	,78009	2,31191
Total	Mean	2,2671	2,5647
	N	17	17
	Std. Deviation	2,56274	6,57339

Skewness of the distribution for return

Market dependent

		Mean value onshore	Mean value offshore
N	Valid	19	19
	Missing	0	0
Skewness		1,165	-,011
Std. Error of Skewness		,524	,524
Kurtosis		2,938	-,403
Std. Error of Kurtosis		1,014	1,014

Multi-Strategy

		Mean value onshore	Mean value offshore
N	Valid	19	19
	Missing	0	0
Skewness		1,215	,295
Std. Error of Skewness		,524	,524
Kurtosis		2,286	-,840
Std. Error of Kurtosis		1,014	1,014

Fund of Funds

		Mean value onshore	Mean value offshore
N	Valid	19	19
	Missing	0	0
Skewness		,372	,288
Std. Error of Skewness		,524	,524
Kurtosis		-,363	-,975
Std. Error of Kurtosis		1,014	1,014

Tactical Futures

		Mean value onshore	Mean value offshore
N	Valid	17	17
	Missing	0	0
Skewness		-1,310	-,023
Std. Error of Skewness		,550	,550
Kurtosis		3,111	-,556
Std. Error of Kurtosis		1,063	1,063

Spearman's Rank Correlation for return

Market Dependent

			Mean value onshore	Mean value offshore
Spearman's rho	Mean value onshore	Correlation Coefficient	1,000	,373
		Sig. (2-tailed)	.	,116
		N	19	19
	Mean value offshore	Correlation Coefficient	,373	1,000
		Sig. (2-tailed)	,116	.
		N	19	19

Multi-Strategy

			Mean value onshore	Mean value offshore
Spearman's rho	Mean value onshore	Correlation Coefficient	1,000	,372
		Sig. (2-tailed)	.	,117
		N	19	19
	Mean value offshore	Correlation Coefficient	,372	1,000
		Sig. (2-tailed)	,117	.
		N	19	19

Fund of Funds

			Mean value onshore	Mean value offshore
Spearman's rho	Mean value onshore	Correlation Coefficient	1,000	,337
		Sig. (2-tailed)	.	,158
		N	19	19
	Mean value offshore	Correlation Coefficient	,337	1,000
		Sig. (2-tailed)	,158	.
		N	19	19

Tactical Futures

			Mean value onshore	Mean value offshore
Spearman's rho	Mean value onshore	Correlation Coefficient	1,000	-,028
		Sig. (2-tailed)	.	,914
		N	17	17
	Mean value offshore	Correlation Coefficient	-,028	1,000
		Sig. (2-tailed)	,914	.
		N	17	17

Spearman's Rank Correlation for standard deviation

Market Dependent

			Standard deviation onshore	Standard deviation offshore
Spearman's rho	Standard deviation onshore	Correlation Coefficient	1,000	,500
		Sig. (2-tailed)	.	,391
		N	5	5
	Standard deviation offshore	Correlation Coefficient	,500	1,000
		Sig. (2-tailed)	,391	.
		N	5	5

Multi-Strategy

			Standard deviation onshore	Standard deviation offshore
Spearman's rho	Standard deviation onshore	Correlation Coefficient	1,000	-,900(*)
		Sig. (2-tailed)	.	,037
		N	5	5
	Standard deviation offshore	Correlation Coefficient	-,900(*)	1,000
		Sig. (2-tailed)	,037	.
		N	5	5

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

Fund of Funds

			Standard deviation onshore	Standard deviation offshore
Spearman's rho	Standard deviation onshore	Correlation Coefficient	1,000	,300
		Sig. (2-tailed)	.	,624
		N	5	5
	Standard deviation offshore	Correlation Coefficient	,300	1,000
		Sig. (2-tailed)	,624	.
		N	5	5

Tactical Futures

			Standard deviation onshore	Standard deviation offshore
Spearman's rho	Standard deviation onshore	Correlation Coefficient	1,000	,500
		Sig. (2-tailed)	.	,391
		N	5	5
	Standard deviation offshore	Correlation Coefficient	,500	1,000
		Sig. (2-tailed)	,391	.
		N	5	5

Mann-Whitney U test for return

Market Dependent
Ranks

	Onshore/Off shore	N	Mean Rank	Sum of Ranks
Yield	Onshore	19	19,84	377,00
	Offshore	19	19,16	364,00
	Total	38		

Test Statistics(b)

	Yield
Mann-Whitney U	174,000
Wilcoxon W	364,000
Z	-,190
Asymp. Sig. (2-tailed)	,849
Exact Sig. [2*(1-tailed Sig.)]	,863(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Multi-Strategy
Ranks

	Onshore/Off shore	N	Mean Rank	Sum of Ranks
Yield	Onshore	19	17,97	341,50
	Offshore	19	21,03	399,50
	Total	38		

Test Statistics(b)

	Yield
Mann-Whitney U	151,500
Wilcoxon W	341,500
Z	-,847
Asymp. Sig. (2-tailed)	,397
Exact Sig. [2*(1-tailed Sig.)]	,402(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Fund of Funds
Ranks

	Onshore/Off shore	N	Mean Rank	Sum of Ranks
Yield	Onshore	19	20,24	384,50
	Offshore	19	18,76	356,50
	Total	38		

Test Statistics(b)

	Yield
Mann-Whitney U	166,500
Wilcoxon W	356,500
Z	-,409
Asymp. Sig. (2-tailed)	,683
Exact Sig. [2*(1-tailed Sig.)]	,686(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Tactical Futures
Ranks

	Onshore/Off shore	N	Mean Rank	Sum of Ranks
Yield	Onshore	17	17,00	289,00
	offshore	17	18,00	306,00
	Total	34		

Test Statistics(b)

	Yield
Mann-Whitney U	136,000
Wilcoxon W	289,000
Z	-,293
Asymp. Sig. (2-tailed)	,770
Exact Sig. [2*(1-tailed Sig.)]	,786(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Mann-Whitney U test for standard deviation

Market Dependent
Ranks

	Onshore/Offshore	N	Mean Rank	Sum of Ranks
Standard Deviation	Onshore	5	5,00	25,00
	Offshore	5	6,00	30,00
	Total	10		

Test Statistics(b)

	Standard Deviation
Mann-Whitney U	10,000
Wilcoxon W	25,000
Z	-,522
Asymp. Sig. (2-tailed)	,602
Exact Sig. [2*(1-tailed Sig.)]	,690(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Multi-Strategy
Ranks

	Onshore/Offshore	N	Mean Rank	Sum of Ranks
Standard Deviation	Onshore	5	5,00	25,00
	Offshore	5	6,00	30,00
	Total	10		

Test Statistics(b)

	Standard Deviation
Mann-Whitney U	10,000
Wilcoxon W	25,000
Z	-,522
Asymp. Sig. (2-tailed)	,602
Exact Sig. [2*(1-tailed Sig.)]	,690(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Fund of Funds
Ranks

	Onshore/Offshore	N	Mean Rank	Sum of Ranks
Standard Deviation	Onshore	5	5,20	26,00
	Offshore	5	5,80	29,00
	Total	10		

Test Statistics(b)

	Standard Deviation
Mann-Whitney U	11,000
Wilcoxon W	26,000
Z	-,313
Asymp. Sig. (2-tailed)	,754
Exact Sig. [2*(1-tailed Sig.)]	,841(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Tactical Futures
Ranks

	Onshore/Offshore	N	Mean Rank	Sum of Ranks
Standard Deviation	Onshore	5	3,80	19,00
	Offshore	5	7,20	36,00
	Total	10		

Test Statistics(b)

	Standard Deviation
Mann-Whitney U	4,000
Wilcoxon W	19,000
Z	-1,776
Asymp. Sig. (2-tailed)	,076
Exact Sig. [2*(1-tailed Sig.)]	,095(a)

a Not corrected for ties.
b Grouping Variable: Onshore/Offshore

Swedish hedge funds represented in the dissertation and their data collected from www.morningstar.se.

Market Dependent

Year	Q	Mangold Fonder Edge	Sector Hedge	DnB NOR Primus	HB Europa Aktie	Cicero Hedge	Lancelot Merlin	Avg. Return
2006	3	3,7	0,1	-1,1	0,9	0,6	-1,0	0,53
	2	1,7	-6,0	-0,7	-1,7	-1,4	-5,4	-2,25
	1	3,7	2,8	6,2	2,1	1,9	13,5	5,03
2005	4	6,2	4,9	1,9	-0,7	1,4	2,2	2,65
	3	4,3	13,2	3,9	0,7	2,4	2,7	4,53
	2	5,2	2,2	3,3	1,8	0,2	0,3	2,17
	1	2,8	5,4	0,1	1,4	2,2	-1,4	1,75
2004	4	0,6	3,6	0,9	2,0	-0,3	0,8	1,27
	3	-0,5	0,8	1,5	-0,8	-0,6	1,0	0,23
	2	4,1	-0,7	-4,8	0,7	2,2	-2,2	-0,12
	1	16,5	5,4	2,3	2,7	-0,4	0,1	4,43
2003	4	8,4	8,0	2,3	0,9	-1,2	-2,6	2,63
	3	16,3	3,0	1,1	0,1	-0,2	-2,3	3,00
	2	14,2	4,3	2,0	-1,1	0,0	-5,9	2,25
	1	0,8	1,4		-2,9	-2,6	3,9	0,12
2002	4	44,3	8,7		0,1	-4,2	2,7	10,32
	3	7,6			-0,2	0,9	9,6	4,48
	2				2,3	1,1	2,8	2,07
	1				0,7	0,7	-3,7	-0,77

Multi-Strategy

		Lynx	H&Q Nordic Hedge	Lancelot Excalibur	Nordea European Equity Hedge Fund	Banco Hedge	Aktie-Ansvar Graal	H&Q Solid	Erik Penser Hedgefond	Avg. Return
2006	3	-3,9	-0,6	3,6	0,2	2,7	1,0	0,6	0,2	0,48
	2	3,0	-0,4	0,9	-1,3	-1,1	0,1	-0,3	-1,4	-0,06
	1	3,5	2,5	-2,5	3,3	5,7	2,4	4,7	-7,9	1,46
2005	4	5,0	3,7	-1,0	-0,2	4,9	1,6	0,6	1,6	2,03
	3	-1,5	-0,7	-2,1	1,4	2,2	1,8	4,6	6,1	1,48
	2	8,1	3,1	3,5	3,9	2,2	1,1	-0,7	4,7	3,24
	1	-4,0	0,2	0,9	-0,3	0,0	2,0	0,7	4,0	0,44
2004	4	14,8	4,1	2,4	1,2	1,2	2,8	4,2	3,1	4,23
	3	-1,9	1,3	-0,1	2,2	-2,9	0,6	0,5	1,0	0,09
	2	-3,4	1,0	1,8	1,5	1,8	2,1	-0,9	-0,8	0,39
	1	4,1	2,0	5,3	1,7	-1,7	0,4	2,8	1,9	2,06
2003	4	9,4	2,1	2,4	0,5	-0,8	3,7	2,6	1,9	2,73
	3	1,2	3,1	-2,8	1,3	-1,9	2,3	1,3	2,4	0,86
	2	18,9		6,6	2,4	2,7	3,1		7,4	6,85
	1	2,3		5,6	1,7	-0,7	1,6		2,4	2,15
2002	4	-2,9		6,2	0,0	-0,8	4,2		4,8	1,92
	3	10,4		0,4	3,9	0,4	8,0		-3,6	3,25
	2	18,9		-3,1	1,1	-6,3				2,65
	1	-4,4		1,9		1,2				-0,43

Fund of Funds

		Helios	Guide Hedgefond	DnB NOR Prisma	SEB Multihedge	H&Q Global Hedge	Avg. Return
2006	3	-0,8	0,4	-1,6	-0,2	-2,6	-0,96
	2	-1,0	-0,9	-1,9	-0,1	-1,5	-1,08
	1	0,2	1,4	3,6	4,1	3,8	2,62
2005	4	0,8	2,4	1,9	0,4	-0,8	0,94
	3	3,1	0,7	4,2	3,1	3,8	2,98
	2	6,5	3,8	1,2	-0,2	0,2	2,30
	1	1,9	1,2	0,4	1,0	0,9	1,08
2004	4	6,7	4,1	4,9	2,4	3,1	4,24
	3	0,3	1,5	2,2	-0,5	0,1	0,72
	2	-1,0	2,1	-2,1	-1,7	-1,2	-0,78
	1	1,3	1,0	3,8	2,8	2,5	2,28
2003	4	3,4	3,1	3,0	1,8	2,6	2,78
	3	2,5			0,6	2,3	1,80
	2	2,8					2,80
	1	1,6					1,60
2002	4	-0,1					-0,10
	3	5,7					5,70
	2	5,4					5,40
	1	0,0					0,00

Tactical Futures

		Mangold Fonder Explora	AMDT Hedge	Stella Nova Hedgefond	Avg. Return
2006	3	2,3	3,6	2,3	2,73
	2	1,0	0,7	1,8	1,17
	1	1,1	4,7	0,1	1,97
2005	4	2,5	2,9	1,7	2,37
	3	3,0	4,3	1,5	2,93
	2	4,9	-2,6	2,4	1,57
	1	1,3	1,3	2,5	1,70
2004	4	-0,3	4,4	1,9	2,00
	3	0,5	6,8	1,7	3,00
	2	1,2		2,2	1,70
	1	6,1		4,0	5,05
2003	4	7,8		4,1	5,95
	3	3,3			3,30
	2	4,0			4,00
	1	-1,5			-1,50
2002	4	5,5			5,50
	3	-4,9			-4,90

Offshore strategies represented in the dissertation and their data collected from <u>Center for International Securities and Derivatives Markets</u> and www.hedgeindex.com.

Year	Quarter	Market Dependent	Multi-Strategy	Fund of Funds	Tactical Futures
2002	1	1,43	0,40	1,23	
	2	-2,44	1,74	-0,26	
	3	-4,47	0,72	-1,18	-4,51
	4	0,78	3,34	1,28	10,63
2003	1	-0,38	2,35	1,07	14,19
	2	7,82	4,68	3,54	-1,90
	3	4,57	2,78	1,92	6,00
	4	5,50	4,47	3,26	4,25
2004	1	3,16	2,42	2,72	-3,30
	2	0,40	0,27	-0,49	6,80
	3	0,24	0,68	0,36	7,11
	4	5,73	4,00	4,35	-10,06
2005	1	0,99	1,14	1,08	-1,56
	2	0,44	-0,86	0,21	11,74
	3	4,71	4,99	3,53	-4,97
	4	2,50	2,15	1,53	4,27
2006	1	5,73	5,59	4,41	1,27
	2	-1,64	1,47	-0,80	-0,47
	3	1,22	1,10	0,63	4,11

Swedish risk free rate over the period

2002	2,8767
2003	2,7233
2004	2,7067
2005	2,25958
2006	2,0363
Avg. over per.	2,520516

Emails

9 November

Mats,

Paul Williams has asked me to respond to the following:

Paul,

The stay in California was nice! I made some new great friends. To bad it was the rainiest season in many years, but oh well. I am afraid that I have further questions if you want to help us. We did contact the SEC but they said that they were not able to help students. So we wonder if you could be kind just briefly telling us about the hedge fund market in the US.

You wrote that "Hedge funds in the US are not regulated to any great extent", but then, if there are not many regulations to follow, how come that so many hedge funds managed from the US are registered offshore? Are there differences in individual states?

We will for sure acknowledge your help in our dissertation!

Sincerely,
Mats Andersson

Domestic Hedge Funds

A domestic hedge fund is pooled investment vehicle that is formed in the United States and open to US investors (but not offered to the public) for the purpose of investment and trade in equity securities, fixed-income securities, derivatives, futures and other financial instruments. Most hedge funds are structured as limited partnerships or in recent years limited liability companies (LLC's). If the fund is a limited partnership, the

investment advisor is typically its general partner. For tax reasons or other reasons there may be other structured relationship between the general partner who is an organization and the portfolio manager who makes the investment decisions. Unlike registered funds, the general partner may not be registered with the SEC. Because hedge funds are unregistered, they can use securities and strategies that are either prohibited or restricted in registered funds. Short sales, arbitrage and other kinds of hedging are commonly used in greater proportions than in regulated funds. For this reason, hedge funds are often referred as "alternative" or "non-traditional" investments.

The Advisers Act defines "investment adviser" as any person, including a natural personal or entity, who for compensation, is engaged in the business of advising others or issuing reports or analyses regarding securities. Hedge Funds maintain their exemption from securities and mutual fund registration by limiting the number of investors and requiring that they be experienced investors with significantly high net worth. Thus, Hedge funds are organized as "3(c)(1)" or "3(c)(7)" funds per the Company Act, referring to exemptions from mutual fund registration. In addition, Hedge Funds also rely on the private offering exemption under the Securities Act to avoid registering the offering of the Hedge Fund's securities as a public offering. Funds that are organized as 3(c)(1) funds are limited to 99 "accredited" investors. Those funds organized as Section 3(c)(7) funds may have up to 499 "qualified" investors, but the net worth requirement is higher.

Offshore Hedge Funds

Like domestic hedge funds are unregistered pooled investment funds domiciled outside the US (i.e., "offshore") and open only to non-US investors or, occasionally, US tax-exempt "accredited" investors. Offshore hedge funds are usually structured as corporations. Like domestic hedge funds, they are not subject to portfolio management restrictions that may apply to registered funds. Generally, the number of investors is not restricted. Many offshore hedge funds are formed in international tax havens such as Bermuda or the Cayman Islands, which offer privacy as well as tax advantages.

Federal and State Regulation of Advisers

The Investment Advisers Supervision Coordination Act allocates regulatory responsibilities for investment advisers between the SEC and the states. Thus a state may not require registration of an investment adviser that is registered or required to be registered with the SEC. Absent an exemption an investment advisor is required to register with the SEC if it:

- Has one or more investment company clients;

- Has $30,000,000 or more in "assets under management;"

- Maintains its principal place of business in a state that does not require registration of advisers (currently on Wyoming);

- Maintains its principle place of business outside the United States, but has US clients;

- Is a nationally-recognized rating organization (rating agency);

- Is a pension consultant with respect to assets of plans (employee benefit plans, government plans and church plans under certain sections of ERISA) with an aggregate value of at least $50,000,000 as of the end of the investment adviser's last fiscal year; or

- Is affiliated (in a control relationship) with an SEC-registered investment adviser, if the two investment advisers share a principal office and place of business.

The Investment Advisers of 1996 established that state laws that require registration, licensing or qualification of an investment adviser or supervised person of an investment adviser may not be applied to an SEC-registered investment adviser or its supervised persons, except that a state may license, register or otherwise qualify any "investment adviser representative" who has a place of business in that state. The Advisers Act defines an "investment adviser representative" of an investment adviser as a "supervised person" of that investment adviser (a) who has more than five clients who are natural persons (other than "excepted persons") and (b) more than ten percent of whose clients are natural persons (other than "excepted persons"). Thus an investment adviser who only manages one hedge fund would not have any investment adviser representatives, since the hedge fund counts as a single client and thus fewer than ten percent of the investment adviser's clients are natural persons. Each state has its own rules with regard to registration.

Change is in the air

On June 23, 2005 the U.S. Court of Appeals for the District of Columbia Circuit vacated SEC Rule 203(b)(3)-2, collectively known as the "Hedge Fund Rule," which effectively required hedge fund managers to register under the Investment Advisors Act. This new rule was to take effect February 2006. See Philip *Goldstein v. SEC* 451 F.3d 873 (DC Circuit, 2006). In December 2004, the SEC adopted the Hedge Fund Rule required each hedge fund manager to "look through" their fund and count each investor as a "client." Managers were given until February 1, 2006, to register and comply with the adviser regulations, including filing disclosures on Form ADV, adopting a compliance program and a code of ethics and being subject to SEC examinations. In *Goldstein*, the DC Circuit ruled that the SEC's interpretation of the term "client" was "counterintuitive" and "arbitrary" because hedge fund managers do not as "investment advisors" to individual investors in their funds; they allocate capital pooled from multiple investors instead of advising investors how to allocate their own capital. The court held that "The adviser owes fiduciary duties to the fund, not to the fund's investors," and thus the fund is the "client."

We are in a wait and see position. I hope this helps. You are welcome to contact me further.

Very truly yours,

Kapp L. Johnson

---

16 November

RE: Info about hedge funds

CISDM

Hello Linus,

The indices (except for the few indicated as Asset weighted) are equal weighted, median return indices.

Best regards,

Ed Szado

CISDM Research Associate