Recent Developments in Hedge Funds

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Summary

Definition of Hedge Funds

Hedge funds are becoming increasingly prominent in global financial markets. Although hedge funds and investment trusts are both forms of pooled investment vehicles, hedge funds are characterized by greater freedom for investment managers in terms of investment strategies. This is because hedge funds' investor base is limited to institutional investors and high net worth individuals, exempting them from the constraints of various regulations, and because they commonly place restrictions on investors' withdrawal of funds.

Growth of the Hedge Fund Industry and Changes in Risk Characteristics

Since the 1990s, the hedge fund industry has grown both in asset size and in number of funds. Investments in hedge funds by institutional investors have increased markedly since 2002. In Japan, pension funds and financial institutions, in particular, have increased investments in hedge funds. Such increase in investments into hedge funds has been supported by a low interest rate environment in major economies and by an increase in demand from investors to diversify their assets. Analyses using publicly available data, although there are some data constraints, reveal that in recent years (1) hedge funds produced positive returns regardless of stock and bond market performance; (2) volatility of hedge fund returns was lower than that of stocks; and (3) portfolio diversification could be expected from investing in hedge funds, as the correlation of returns between hedge funds and traditional assets was low. Such risk-return properties of hedge funds may have matched investor demand.

Hedge funds have become increasingly active in a variety of markets, exploiting new investment strategies as they grow in size and investor base, and have contributed to enhancing efficiency and liquidity in global financial markets. Accordingly, the risk characteristics of hedge funds have changed. Data show that in the few years after 2002, compared to the late 1990s, which coincided with the Long-Term Capital Management (LTCM) crisis, (1) returns of hedge funds and their volatility were lower and (2) incidents where hedge funds incurred large losses that exceeded maximum losses calculated by Value at Risk (VaR) were fewer. Meanwhile, investors have become more conscious of risk management and less keen on investing in hedge funds that use extraordinary levels of leverage, and leverage levels taken by hedge funds seem to have declined. Investors are also more careful to avoid concentrating their investments in certain hedge funds because hedge funds tend to be quickly weeded out in terms of "survival of the fittest."

Regulatory Environment in the Hedge Fund Industry

In the United States, the Securities and Exchange Commission (SEC) amended regulations to place tighter restrictions on investment managers. In the United Kingdom, a new collective investment vehicle that has the characteristics of hedge funds, called the Qualified Investor Schemes, was introduced for institutional investors. In some European and Asian countries, building a legal environment to allow hedge funds to target retail investors has been contemplated in recent years. Although the directions of changes are not uniform, legal developments with respect to hedge funds have been noted. These changes are all being made to find the appropriate balance between ensuring a wide range of investment options for investors and protecting investors.

Recent Issues concerning Hedge Funds

Hedge funds, on the whole, seem to be taking less risk in recent years. However, there are some that take high risk, and when the global financial environment permits, more funds may be inclined to do so in seeking higher returns. Given their growing presence in the global financial markets recently, it cannot be denied that large losses by or default of hedge funds may not only affect their counterparties and investors, but also have wide-ranging external effects on liquidity and the price discovery process in global financial markets. Therefore, it is vital to pay close attention to hedge fund activities and their effects.

In the discussion of hedge fund developments in global financial markets, two issues come to the fore: (1) exploring ways to enhance information disclosure on hedge funds and risk management by counterparties and investors of hedge funds; and (2) understanding the influences that hedge fund activities or default have on global financial markets and systems.

While there are outstanding issues to be addressed, much progress has been noted in risk management by counterparties of hedge funds since the LTCM crisis. However, it is necessary to continuously check counterparties' risk management standards so that they will not be lowered when the environment becomes more competitive. The widely held view in regard to information disclosure on hedge fund activities is that having counterparties and investors obtain necessary information to manage risk from hedge funds is more efficient and effective than uniformly imposing statutory requirements on hedge funds.

Hedge fund activities and their influences need to be monitored, even though there are data constraints, with a focus on the following two issues in particular. One is whether there is

a risk that hedge fund activities might destabilize markets if hedge fund transactions become concentrated on similar strategies or pressured to use high-risk strategies in market environments where profit opportunities are few. The second is whether there is a risk that market liquidity might dry up with the exit of hedge funds.

In these circumstances, financial authorities including central banks have been examining risk management systems of financial institutions including banks and securities firms, from the perspective that these market players are counterparties and investors of hedge funds. Furthermore, financial authorities have been discussing ways to adequately monitor market developments in hedge funds, such as enhancing information exchange in international fora and supporting efforts to improve databases on hedge funds.

I. Introduction

Hedge funds, which are a type of investment vehicle, are becoming increasingly prominent in global financial markets. Hedge funds are commonly defined as "any investment vehicle that is privately organized, administered by professional investment managers, and not widely available to the public."[1] There is, however, no generally accepted definition, and the term may encompass investment vehicles that invest in many different types of financial assets and employ a wide array of investment strategies.

The history of hedge funds dates as far back as 1949, but they gained widespread recognition when the hedge fund founded by George Soros reportedly drove the British pound out of the Exchange Rate Mechanism (ERM) in the 1992 European Currency crisis. Later, the extraordinary losses incurred by the Long-Term Capital Management (LTCM), a U.S.-based hedge fund, and its near-collapse in 1998 raised concerns about the influence of hedge funds on the stability of financial markets and systems and prompted various discussions.

Asset inflows into hedge funds were subdued after the near-collapse of LTCM, but have increased significantly in recent years, as investors' demand for yields and diversification of risk has grown amidst low interest rate environments in major economies.

This paper is structured as follows. Section II describes the characteristics of hedge funds and distinguishes hedge funds as a type of financial asset. Section III depicts the growth of the hedge fund industry after the LTCM crisis. Section IV portrays the growing presence of hedge funds in financial markets, and analyzes the risk characteristics of hedge funds. Sections V and VI consider factors influencing hedge fund risk characteristics and the competitive environment in which hedge funds operate. Section VII outlines the regulatory environment, including recent changes, in major economies including Japan. Finally, Section VIII presents some observations on the prevailing views on hedge funds around the globe, empirical analyses, and recent efforts of financial authorities including central banks in this arena.

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[1] This is quoted from the "Report of The President's Working Group on Financial Markets on Hedge Funds, Leverage, and the Lessons of Long-Term Capital Management" (1999, "The President's Working Group Report" hereafter). The Working Group was set up following the LTCM crisis and comprised of the U.S. Department of Treasury, the Board of Governors of the Federal Reserve System, the Securities and Exchange Commission, and the Commodity Futures Trading Commission.

II. Definition of Hedge Funds

1. Basic Characteristics

Hedge funds, as compared to investment trusts,[2] generally have the following characteristics.

(1) Greater freedom of investment strategies for investment managers:

Hedge funds generally limit their investors to institutional investors and high net worth individuals, namely those who do not require much investor protection. They often prefer private offerings over public offerings in raising funds, securing greater freedom of investment strategies compared to investment trusts, such as taking short positions in stocks and using derivatives flexibly. In addition, they are scarcely subject to regulations and supervision by financial authorities, and heavy requirements for disclosure.

(2) Investment strategies pursuing "absolute returns":

Generally, investment trusts benchmark their performance against stock or bond market trends and target higher returns relative to these trends, so their performance evaluation is also in relative terms. Hedge funds, in contrast, pursue absolute returns, where a certain level of returns not linked to market trend, is expected.

(3) Compensation for investment managers is linked to their funds' performance:

Hedge funds are managed by investment managers. Investment managers typically receive a 10–20% incentive fee[3] on top of the 1–2% management fee (Chart 1). In addition, investment managers frequently commit their own money in the hedge funds they manage.

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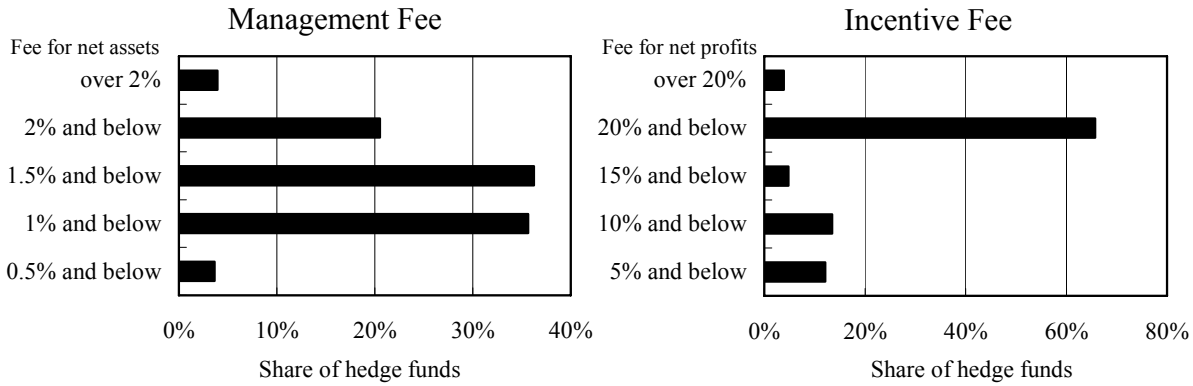
[2] In this paper, the term "investment trust" will be used to refer to the most common mutual fund-type investment vehicles in Japan. Unlike mutual funds in the United States, most of these investment trusts are contractual type.

[3] Incentive fees often take the form of a "high water mark" that bases compensation for investment managers on only the portion of the net asset value that exceeds historical highs. Approximately 72% of all hedge funds registered in the Lipper Tass Database as of March 2005 adopt this type of compensation scheme.

(Chart 1) Incentive Structure for Investment Managers (share, %)



Note: Based on 3071 hedge funds registered in Lipper TASS Database as of March 2005.
Source: Lipper TASS Database

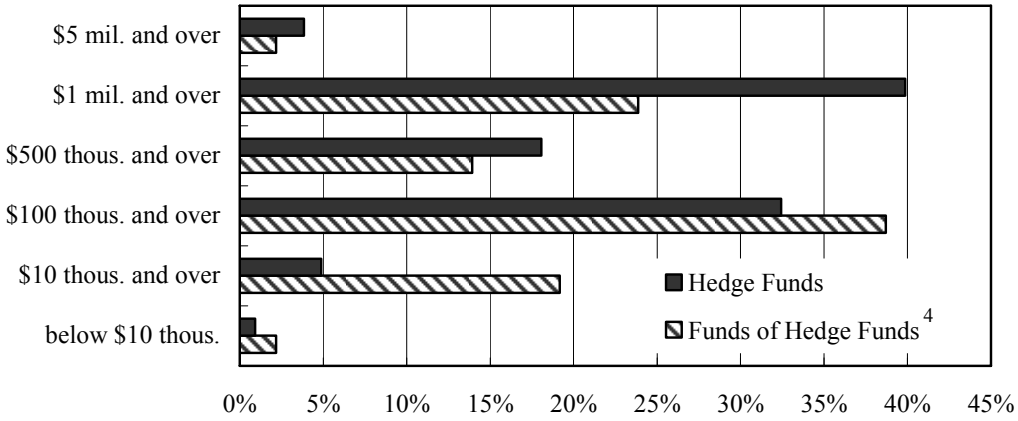
2. Characteristics and Structure of Hedge Funds

(1) Characteristics of hedge funds

The characteristics of hedge funds may vary depending on the legal framework in various countries and schemes they employ, but they typically share the following characteristics, and have similar subscription and withdrawal processes. Hedge funds generally do not raise funds by public offerings but rather by private offerings. Therefore, investors often find the hedge fund matching their needs by using research companies, so-called "gatekeepers," that assess the risks and returns of individual funds and provide information on hedge funds when investing in hedge funds.

Investors choose a fund by first obtaining a prospectus from individual hedge funds and carefully evaluating the information. Upon deciding to invest, investors mail the required paperwork such as the application form to the party designated in the prospectus and transfer money to the designated bank account. Purchase dates are typically limited to certain days of the month, such as the month-end, and the purchase application and payment need to be made within the specified term before the purchase dates. Many funds set a minimum investment requirement of 100,000 U.S. dollars, or approximately 10 million yen (Chart 2).

(Chart 2) Minimum Investment Requirements of Hedge Funds (share, %)

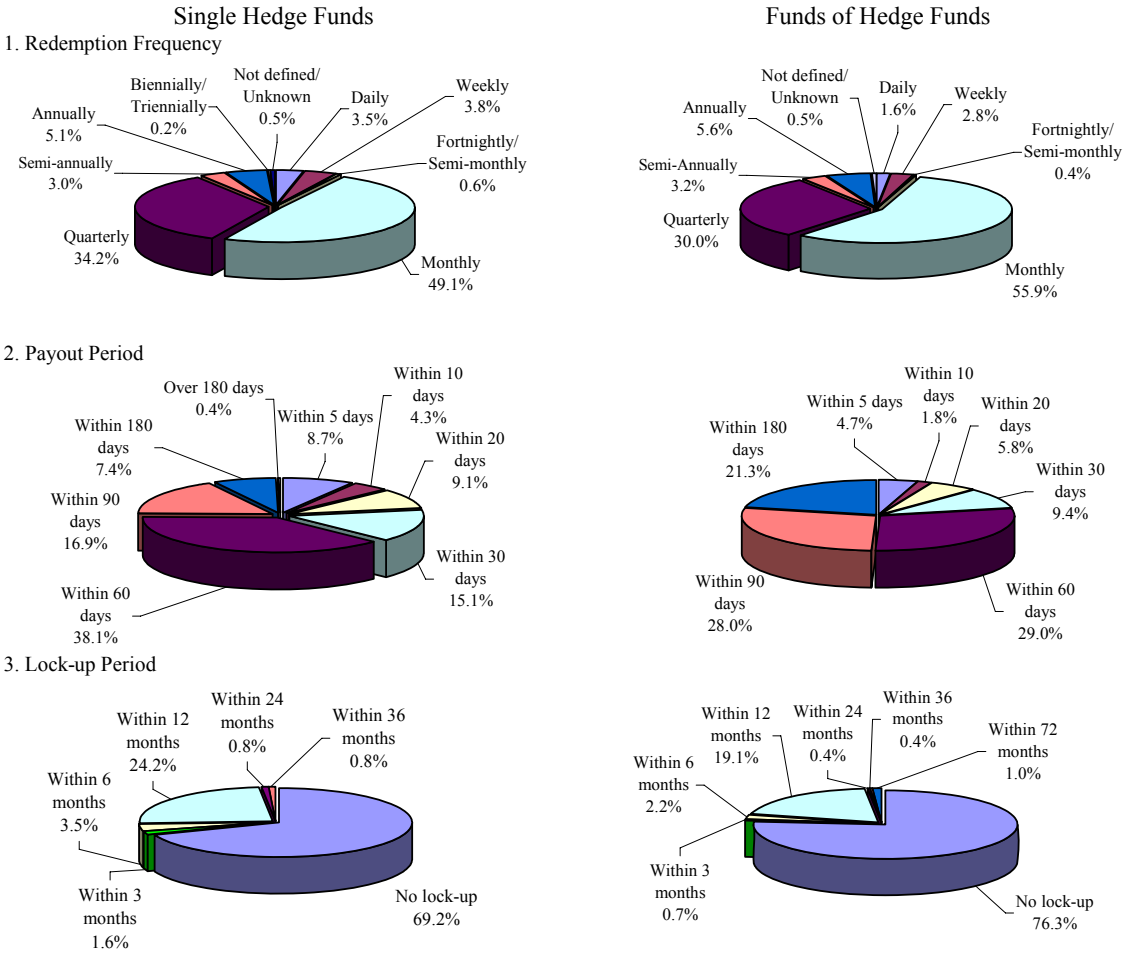


Note: Based on 2397 hedge funds registered in Lipper TASS Database and reporting relevant data in U.S. dollars as of March 2005.
Source: Lipper TASS Database

Investors have two ways to withdraw funds from hedge funds, namely distributions and termination of investments. Whether distributions are paid out depends on contracts with individual investors. In many cases, hedge funds pay distributions to investors in Japan. In most other countries, hedge funds do not pay distributions to investors, so money is generally kept in the fund as retained earnings. Various constraints are often set for investors to terminate investments in the fund. In many cases, investors are allowed to terminate investments only on certain dates such as specified days of the month or quarter (Chart 3.1). To apply for termination, investors need to notify the hedge fund of their intentions well ahead of the specified date for termination application, and actual payment will only be made after a predetermined period. The period between the termination application date and pay-out date may exceed 60 days (Chart 3.2). In addition, investors are not allowed to terminate investments for a certain period from the starting date, the so-called "lock-up period" (Chart 3.3). Lock-up periods are not always binding and may vary across hedge funds and with each investor. Investors may be allowed termination within shorter periods by paying extra fees, while hedge funds may also reserve the right to extend the period needed for termination when exceptional events like market turbulence occur.

[4] Funds that invest in a number of other hedge funds.

(Chart 3) Liquidity Constraints of Hedge Funds (share, %)



Note: Based on 2256 single hedge funds and 817 funds of hedge funds registered in Lipper TASS Database as of March 2005. As for the lock-up period, "No lock-up" includes hedge funds that allow withdrawal at any time in return for a relatively higher fee.
Source: Lipper TASS Database

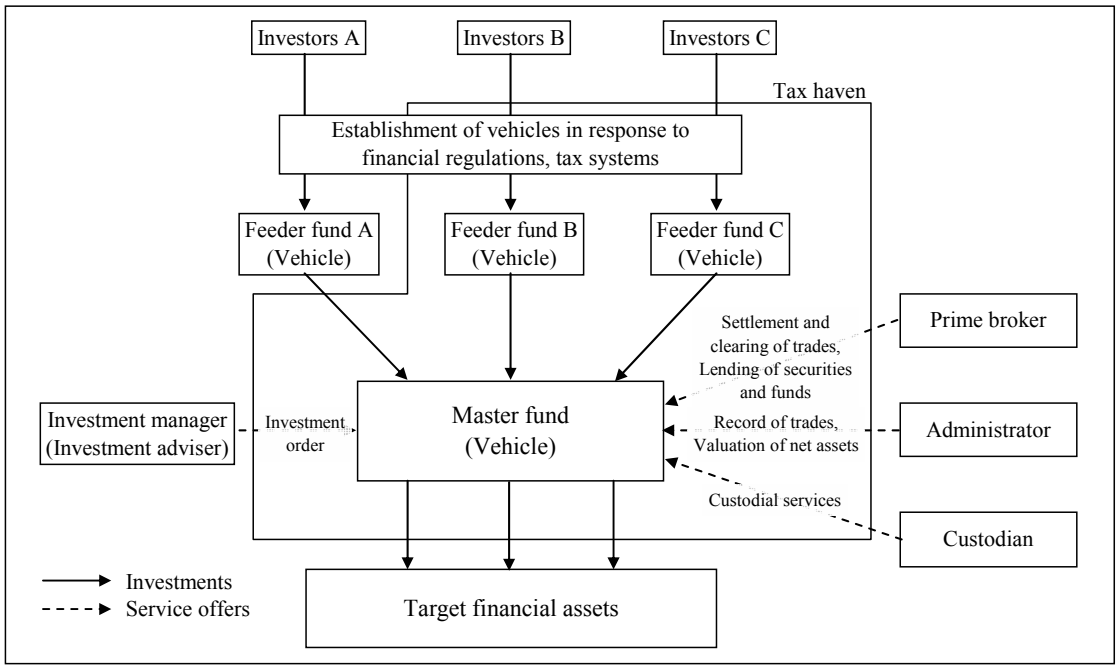
When viewed as financial products, hedge funds are less liquid than investment trusts and government bonds, due to stricter constraints for subscription and termination.[5] Such liquidity constraints for investors allow investment managers to set longer investment time horizons, thus helping to pursue a certain level of performance required by investors.

[5] Funds of hedge funds often have lower minimum investment requirements but take longer to pay out compared to single hedge funds (Charts 2, 3).

(2) Structure of hedge funds (Chart 4)

The basic structure of hedge funds consists of an investment vehicle where investment funds are pooled and investment managers who give instructions on investments of the investment vehicle. The term "hedge fund" generally refers to the investment vehicle, but may include investment managers as well. This paper follows such conventional use of the term unless there is room for misunderstanding.

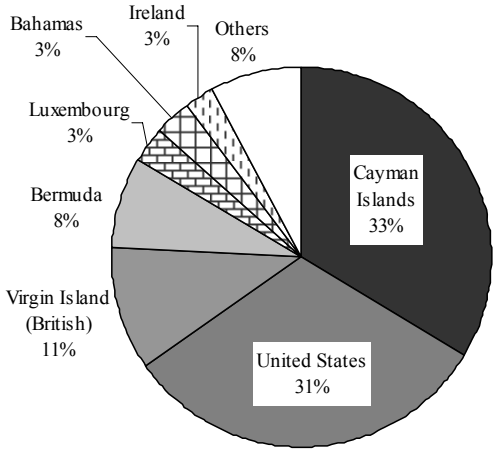
(Chart 4) Example of Hedge Fund Structure



Hedge funds that target U.S. investors are typically limited partnerships domiciled in the United States (Chart 5). Those that target investors in countries other than the United States, including Japan, are often set up as investment companies, trust companies, or limited partnerships domiciled in offshore tax havens like the Cayman Islands. Several sub-funds, so-called "feeder funds," may be established under the master fund to cover investors who may face different financial and tax regulations.[6]

[6] A structure known as "parallel funds," involving several funds that each specializes in accommodating investors in a specific legal and tax environment, can achieve similar objectives. A master fund does not exist in this structure, and the overall returns are allocated to each fund according to predetermined conditions in the contract.

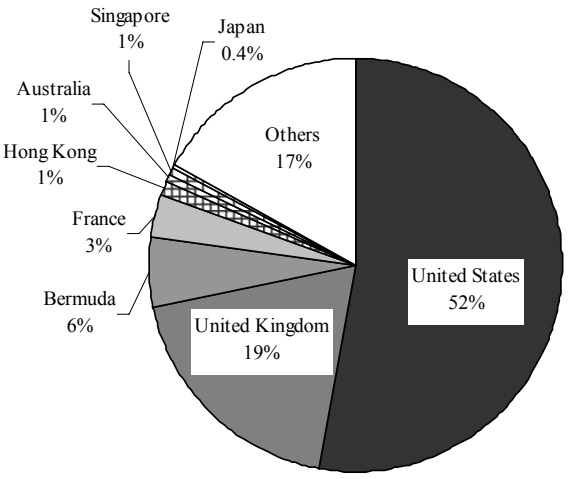
(Chart 5) Fund Domicile (share, %)



Note: Based on 3071 hedge funds registered in Lipper TASS Database as of March 2005.
Source: Lipper TASS Database

Some investment managers of hedge funds targeting investors in Asia and Oceania reside in countries within the region, such as Japan, Australia, Hong Kong, or Singapore, but most investment managers reside in the United States or United Kingdom (Chart 6). Investment managers are sometimes employed by large financial institutions or investment advisory companies, but are usually independent from such organizations.

(Chart 6) Location of Investment Managers (share, %)



Note: Based on 3048 hedge funds registered in Lipper TASS Database as of March 2005. This chart shows the top 4 areas all over the world and those in Asia and Oceania.
Source: Lipper TASS Database

In addition, the following parties provide services for hedge funds.

a. Prime brokers:

Prime brokers supply hedge funds with clearing and settlement of trades, as well as lend securities and cash to them. They sometimes provide other services such as giving advice for establishing new hedge funds and introducing investors. One hedge fund may use the services of more than one prime broker. The prime brokerage business is currently dominated by a handful of major investment banks.

In Japan, the prime brokerage services are mainly provided by Japanese branches of foreign securities firms, and the role played by Japanese banks and securities firms is still limited.

b. Administrators:

The main tasks of administrators are keeping the books, calculating the net asset value (NAV) of funds based on the valuation of assets, and reporting to investors. Even though assets invested by hedge funds are often illiquid and their market values are not always explicit, the evaluation of NAV is crucial, because hedge fund performance and investment manager compensation are calculated based on NAV. Such services are provided by prime brokers and investment managers in some cases.

c. Custodians:

Custodians are often entrusted with the safe-keeping of hedge fund assets such as securities and deposits. Prime brokers often provide custodian services.

III. Growth of the Hedge Fund Industry

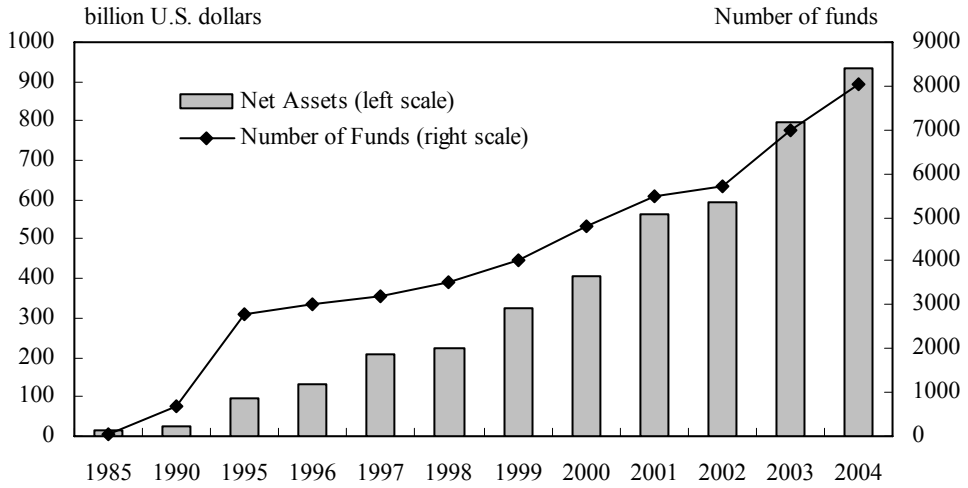
1. Hedge Fund Industry[7] and Its Growth

Since 1990, the hedge fund industry has grown 37 times in asset volume and 12 times in number of hedge funds (Chart 7). It is also expected to grow by another 60 to 70% and reach 1.7 trillion U.S. dollars in asset volume and 11,700 in number of funds by 2008 (Van Hedge Fund Advisors).

However, the amount of assets invested in hedge funds accounts for only about 1% of the total global financial assets.

[7] Hereafter, the hedge fund industry as mentioned in this paper will include funds of hedge funds that invest in other hedge funds, unless otherwise stated.

(Chart 7) Estimated Amount of Assets and Number of Funds in Hedge Fund Industry



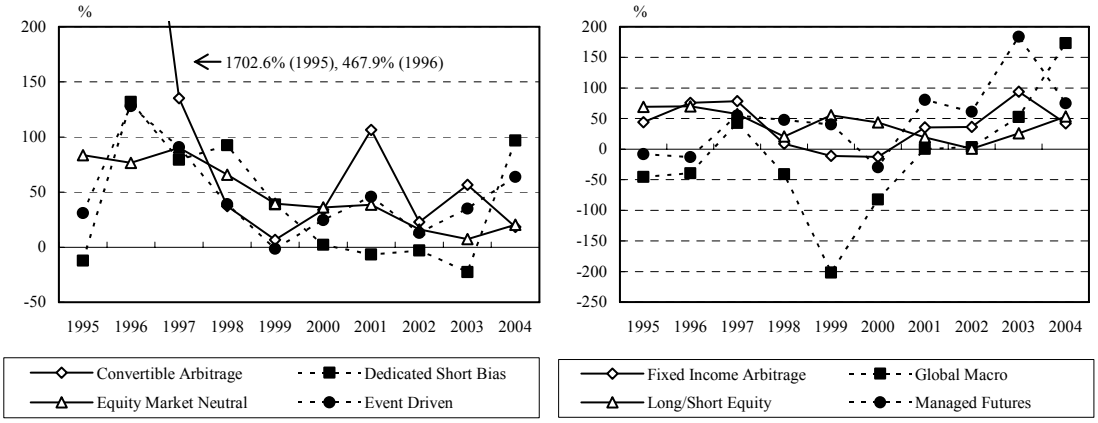
Sources: Hennessee Group LLC; Hedge Fund Research; International Financial Services, London

The asset size and number of funds of hedge funds (FoHFs) have increased 3.5 times from 2001 to 2004 (Hedge Fund Research). This increase was supported by growing interest from institutional investors who have increased their investments in hedge funds in recent years, because investments in FoHFs offer merits such as wider risk diversification and lower minimum investment amounts compared to investments in single hedge funds (Chart 2).

2. Changes in Asset Flows into Hedge Funds by Strategies

Hedge funds are often categorized by the investment strategies they employ. For example, funds that take long positions on undervalued stocks and short positions on overvalued stocks are called “Long/Short Equity” funds. Those that invest in convertible bonds combined with credit derivatives or stocks and take advantage of arbitrage trading among these assets are called “Convertible Arbitrage” funds (Box 1). Cumulative assets invested into hedge funds have increased for most strategy-type hedge funds (Chart 8).

(Chart 8) Changes in Cumulative Asset Flows by Strategies (Year-on-year)

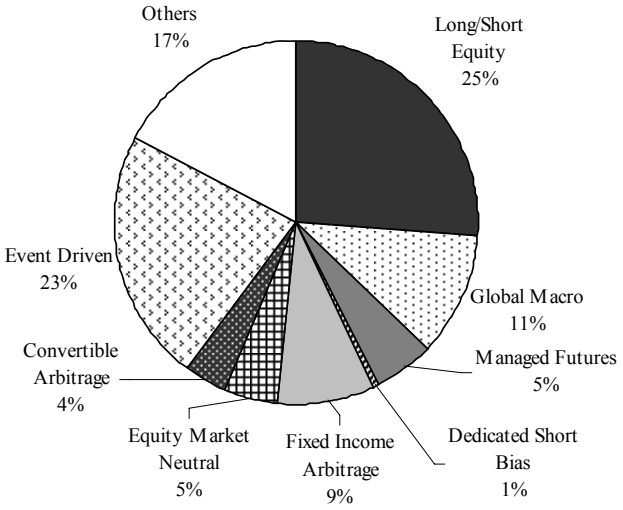


Source: Tremont Capital Management

Hedge funds that employ investment strategies based on their views on the global economy, the so-called "Global Macro" funds, accounted for a dominant 70% of the hedge fund industry in the early 1990s but their share plunged as investors withdrew assets from these funds following the LTCM crisis. On the other hand, hedge funds that take neutral positions on the market overall and find arbitrage opportunities on individual securities, namely arbitrage-type-strategy funds, have been attracting increasing amounts of assets from investors, and their market share has been increasing.

Looking at the share of hedge funds by strategies, hedge funds that take directional positions in certain markets, such as "Long/Short Equity" funds or "Global Macro" funds, account for one-third of the total amount of hedge funds in the Credit Suisse/Tremont Hedge Fund Index as of March 2005 (Chart 9). Arbitrage-type-strategy funds that take advantage of price anomalies between individual securities such as "Fixed Income Arbitrage" funds and "Equity Market Neutral" funds, and "Event Driven" funds that capture price movements generated by significant corporate events such as mergers and acquisitions account for approximately 20% of the industry, respectively.

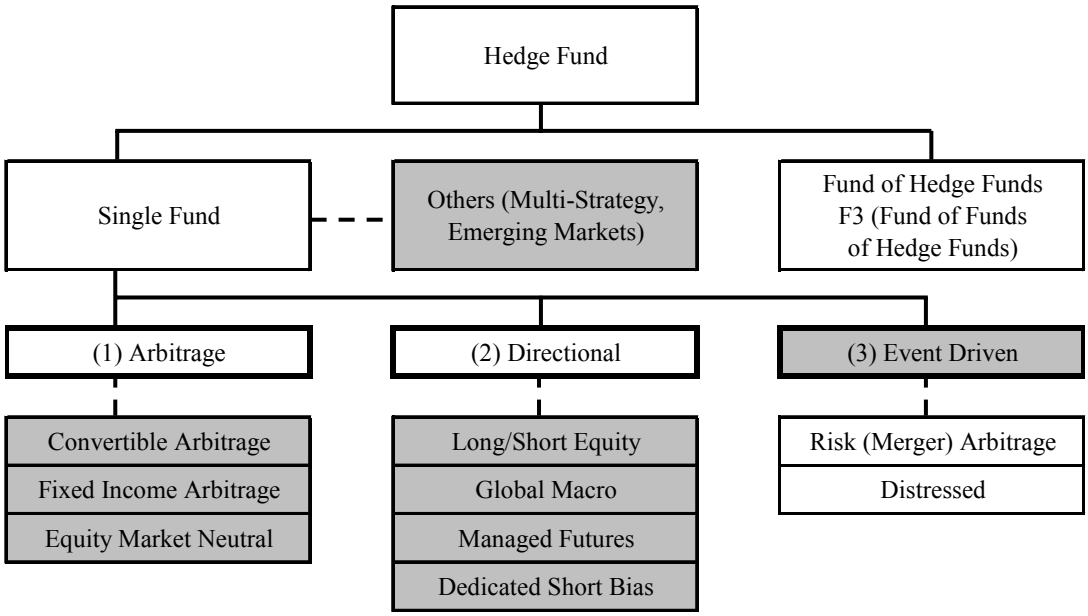
(Chart 9) Strategy Composition in Credit Suisse/Tremont
Hedge Fund Index (March 2005)



Note: Asset weighted shares. "Others" includes "Emerging Markets" strategy and "Multi-Strategy."
Source: Credit Suisse/Tremont

[Box 1] Major Strategies of Hedge Funds

Hedge fund strategies can be divided into three main categories: (1) arbitrage strategies that take advantage of price discrepancies to generate returns, (2) directional strategies that base returns on views on market directions, and (3) event driven strategies that focus on exceptional events. In addition, there are other strategies such as "Multi-Strategy" that use several strategies within a fund and "Emerging Markets" that target specific regions (Box Chart). Hedge fund strategies are diverse and databases may employ different categorizations, and some hedge funds do not fall under any of the categories specified. In this paper, the categories used by the Credit Suisse/Tremont are applied.



Note: Strategies used in the analyses are shown in gray boxes.

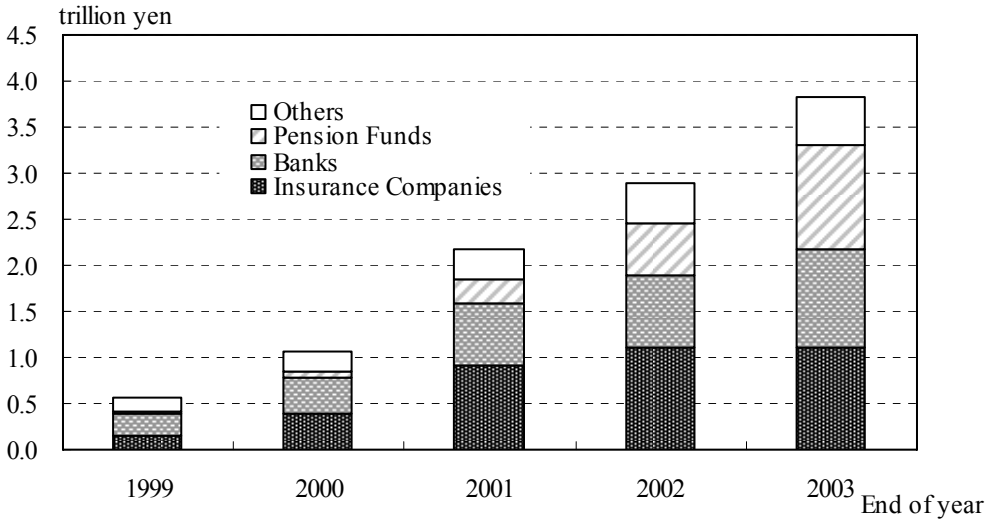
Strategy	Description
Convertible Arbitrage	This strategy makes use of price relationships between convertible bonds and other securities. A typical investment is to be long on convertible bonds and short on common stocks of a company.
Fixed Income Arbitrage	This strategy focuses on price anomalies between related fixed income securities and takes profits from the normalization process. Main investment targets include public and corporate bonds, asset-backed securities, and derivative products such as swaps.
Equity Market Neutral	This strategy typically involves holding long and short matched equity portfolios, and taking advantage of price anomalies. This means being beta neutral, seeking to generate steady returns regardless of market fluctuations.
Long/Short Equity	This strategy involves, for example, being long on stocks whose prices are expected to rise and short on stocks whose prices are expected to decline. The purpose is to generate returns while limiting the influences of market volatility. Positions may be net long, net short, or market neutral. Many funds in this category seem to have gained returns from their long positions, and so a greater number of funds tend to take long-biased positions.
Global Macro	This strategy seeks investment opportunities in a wide range of markets including bonds, foreign exchange, commodities, and derivatives across many economies to generate returns from price anomalies or the direction of market movements.
Managed Futures	This strategy seeks investment opportunities in a wide range of futures markets such as equities, interest rates, currencies, and commodities. Commodities Trading Advisors fall under this category. There are funds that not only trade on prices but also on technical indices.
Dedicated Short Bias	This strategy maintains net short positions, mostly in stocks and derivatives.
Event Driven	This strategy tries to capture price movements stemming from significant corporate events such as mergers and acquisitions, restructuring, insolvencies, and defaults.

Source: Credit Suisse/Tremont

3. Increase in Investments in Hedge Funds in Japan

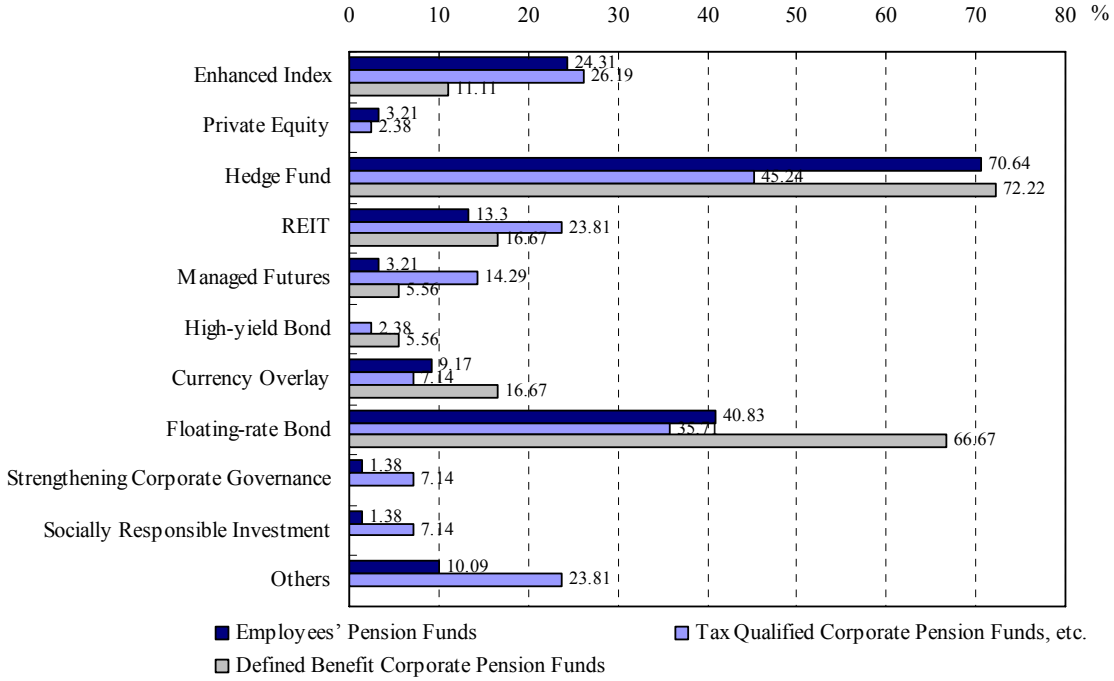
Looking at the situation in Japan, institutional investors such as pension funds and financial institutions, in particular, have stepped up their investments in hedge funds steadily in recent years as they increase alternative investments to diversify risks away from traditional assets such as stocks and bonds. The results of several studies show that investment amounts have grown 7 times and the number of investors has increased more than 10 times since 2000 (Chart 10). The results of a questionnaire survey on corporate pension funds in Japan reveal that approximately 70% of the funds perceive hedge funds as an asset to be invested in in the future (Chart 11).

(Chart 10) Hedge Fund Investments by Japanese Investors



Note: Yen-dollar exchange rates at the end of each year applied to yen conversions of original data.
Source: Alternative Investment Products Co., Ltd.

(Chart 11) Newly Intended Investments by Corporate Pension Funds

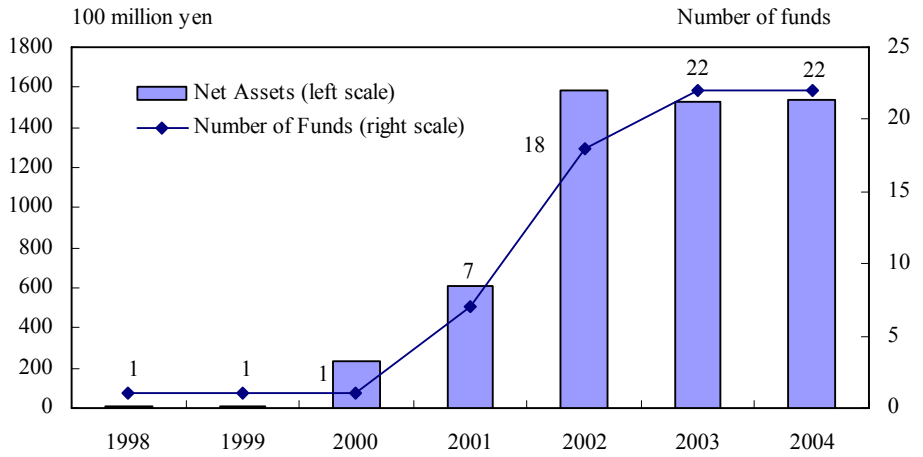


Sources: Rating and Investment Information, Inc., Nihon Keizai Shimbun, Inc.

Because of the large minimum investment amounts and difficulties faced in assessing risks involved in hedge fund investments, it is not always easy for retail investors to directly invest in single hedge funds. However, retail investors seem to be increasing investments in investment trusts that use similar strategies to hedge funds' in recent years[8] (Chart 12).

[8] Such types of investment trusts include those investing in bonds that base payout conditions on the performance of hedge funds.

(Chart 12) Hedge-Fund-Like Investment Trusts in Japan

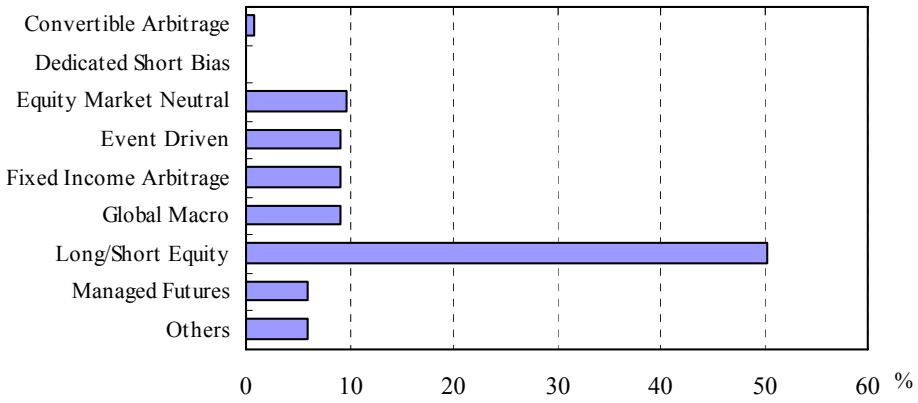


Note: This chart covers investment trusts classified under "Domestic Hybrid Category/Alternative Investment," "International Hybrid Category/Alternative Investment (Fully hedged)," or "International Hybrid Category/Alternative Investment (Non-hedged)" by Morningstar Japan. Included are publicly offered stock investment trusts managed for one year or more with net assets over one billion yen, excluding those domiciled overseas. There were 22 such funds as of April 2005.

Source: Bloomberg

Hedge funds that invest in Japanese financial assets mainly employ strategies with a focus on stocks (Chart 13).

(Chart 13) Strategies of Hedge Funds Investing in Japanese Financial Assets



Note: Based on 133 single funds registered in the Lipper TASS Database.
Source: Lipper TASS Database

[BOX 2] Asian Crisis, LTCM Crisis, and Hedge Funds

The hedge fund market has achieved significant growth over the last 10 years; however, it has not grown steadily. In particular, from mid-1997 to autumn 1998, concerns over hedge fund activities arose on several occasions.

First, in July 1997, the Thai baht underwent a series of devaluations; the turmoil spread to East Asian countries, such as Korea, Hong Kong and Taiwan, as well as the emerging markets of Latin America. During this Asian currency crisis, it was suggested that hedge fund activities might have caused the instability in the markets and economies.

Then in August 1998, Russia announced the devaluation of the ruble and a moratorium on foreign debt payments. This made investors more cautious about credit risks, and suddenly a "flight to quality" spread through markets around the world. As a result, liquidity dried up in a number of markets, and LTCM was brought to the verge of collapse. There was a real fear that, if the Fund failed, its counterparties would scramble to settle and sell off their collateral to secure their claims, thus accelerating the deterioration in market conditions. In response, the Federal Reserve Bank of New York urged major banks and securities firms, which were the Fund's key counterparties and investors, to consider taking action to minimize the disruption. Eventually, 14 companies contributed funds totaling 3.6 billion U.S. dollars to help the Fund avoid bankruptcy.

From 1999 to 2000, a number of reports were published by U.S. authorities and international organizations, (Note) raising the following policy issues as lessons learned from the LTCM crisis:

- First, instead of placing direct regulations on hedge funds, supervisors and regulators should encourage hedge funds' counterparties, such as banks and securities firms, to improve their risk management and make efficient use of market discipline to ensure that excessive leverage is effectively monitored.
- To reinforce this, supervisors and regulators should encourage hedge funds to enhance information disclosure and, in some cases, regulatory measures should be taken to ensure this.
- If these indirect measures do not produce appreciable results, supervisors and regulators should consider more direct regulatory and supervisory measures, such as a licensing system and capital adequacy requirements.

Note: These publications include The President's Working Group Report, BCBS [1999a], IOSCO [1999], and FSF [2000].

IV. Recent Growth of the Hedge Fund Industry and Changes in Risk Characteristics

1. Greater Presence of Hedge Funds as Market Participants

Looking at global financial markets in recent years, returns have declined in the low interest rate environment since 2000, while risk management techniques have become increasingly sophisticated. Amidst such changes in the market environment, risk characteristics of hedge funds have also changed based on the experiences of the LTCM crisis (Box 2). In other words, hedge funds, which were considered to take speculative positions with a huge amount of money on certain macroeconomic scenarios such as a currency system collapse in order to achieve high returns, have become providers of liquidity in a wide range of markets by employing various sophisticated investment strategies and diversifying risks widely in global financial markets.

One of the characteristics of hedge funds is to take risks and achieve returns efficiently through their use of diverse asset management techniques across a wide range of markets. Such diversification of trades by hedge funds contributes to providing liquidity to financial markets where positions tend to concentrate in one direction.

In addition, because hedge funds invest in many markets and employ various trading techniques, their activities have made correlations among various markets higher. Increasingly active trades by hedge funds have contributed to eliminating market inefficiencies, and enhancing the functioning of markets overall. The events surrounding the May 2005 downgrade of a major U.S. automobile company are a good example of the massive influence that hedge fund activities have on financial markets. The downgrade not just led to widening of spreads in the U.S. junk bond market, but also had influences on other markets such as stocks and subordinated bonds issued by Japanese banks via hedge fund strategies using credit derivatives, securitized financial products, and convertible bonds.[9] In addition, hedge fund activities and concerns over their activities may have triggered influences on global financial markets such as lowering the trading volume of futures on currencies, crude oil and other commodities, and slowing the pace of foreign investment inflows into Japanese stock markets.

[9] "Convertible Arbitrage" funds with the combination of short positions in stocks and long positions in convertible bonds sold subordinated bonds, CDS, and other assets that would yield returns so that they could offset losses incurred by the sudden upswing in stock prices as U.S. investors bought General Motors stocks in large volumes and by the downgrading of General Motors corporate bonds by Standard and Poor's. Funds that traded taking advantage of estimated correlations of CDS tranches also incurred losses and the subsequent closing of positions by these funds apparently affected price movements in high-credit-rating asset backed securities markets.

As described above, a balanced perception of hedge fund activities extending over various markets and on their risk characteristics is crucial in order to understand the increasingly close and complex relationships among financial markets on a global basis. In this sense, it is important to note that the presence of hedge funds as market participants in financial markets has grown significantly in recent years.

2. Increase in Investments in Hedge Funds by Institutional Investors

In the past, investors in hedge funds were primarily high net worth individuals, but in recent years, the share of institutional investors has been growing. The results of a survey conducted on approximately 50 U.S. institutional investors and hedge funds (released in September 2004) indicate that (1) the investment amount of U.S. institutional investors in hedge funds was approximately 66 billion U.S. dollars at the end of 2003 and is forecast to exceed 300 billion U.S. dollars by the end of 2008, and (2) 30% of the investment amount in hedge funds was accounted for by institutional investors at the end of 2003, and the share may exceed 50% by the end of 2008 (Bank of New York and Casey, Quirk & Acito).

3. Background to the Growth of the Hedge Fund Industry

Investments in hedge funds, especially from institutional investors, grew mainly against the background of the continued low interest rate environment in major economies and increased demand from investors for diversification of investment assets. In addition, hedge fund performance in recent years seemed to have met the needs of investors. More specifically, hedge fund returns were relatively stable even amidst the stock market slump, and exceeded returns on bonds even though interest rates remained low. Volatility,[10] on the other hand, was lower than that of stocks and was comparable to that of bonds. Moreover, investors are increasingly adding hedge fund investments to their portfolio in order to diversify risks, because hedge fund returns show a low correlation with returns on stocks and bonds in general, although there are some hedge funds that show a high correlation with stocks.

In the following paragraphs, volatility of returns on hedge funds and traditional assets will be analyzed using the Credit Suisse/Tremont Hedge Fund Index to represent hedge fund performance.

There are some points that must be noted when using indices in analyses. First, indices are

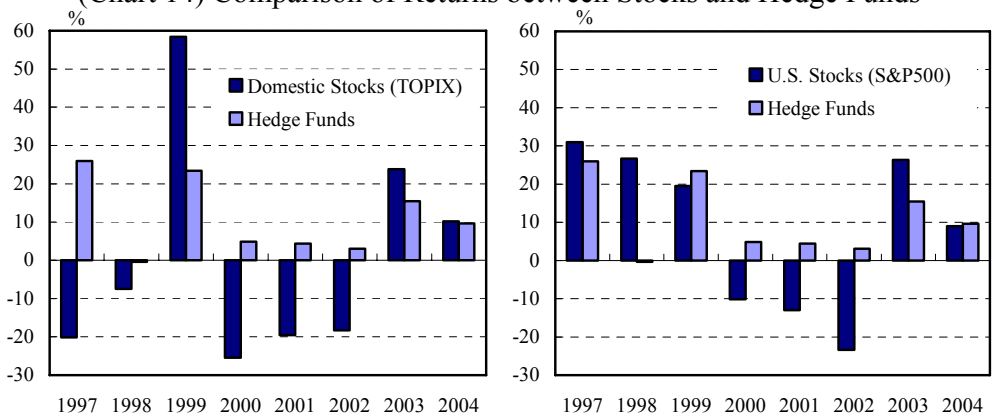
[10] "Volatility" refers to the standard deviation on monthly rate of returns of each index used. This definition applies to the following analyses in this section.

average data so the diverse characteristics of each fund are not reflected, and indices themselves are biased to some extent (Box 3). In addition, when interpreting the results of the analyses, it should be remembered that the number of sample data is limited, because the hedge fund indices used in the analyses are based on information taken from databases to which hedge funds voluntarily provide information and data is collected mainly on a monthly basis.

Comparison of Traditional Assets and Hedge Funds: Returns, Volatility, Correlation

A comparison of returns between hedge funds and stocks shows that hedge fund returns were steadily positive in the period between 2000 and 2002 when stock markets slumped. After 2003, however, returns on stocks exceeded that of hedge funds (Chart 14).

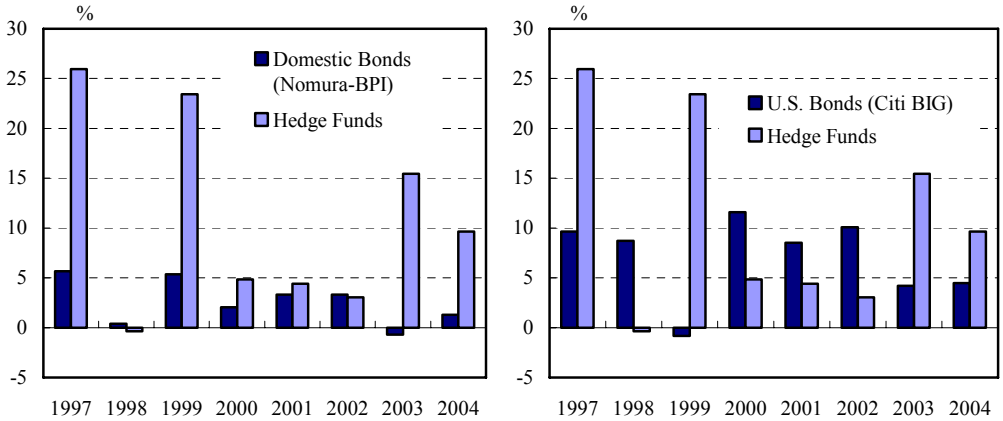
(Chart 14) Comparison of Returns between Stocks and Hedge Funds



Sources: Credit Suisse/Tremont, Bloomberg

Looking at the returns on bonds and hedge funds, hedge fund returns exceeded bond returns, except from 2000 to 2002 when stock prices were weak (Chart 15).

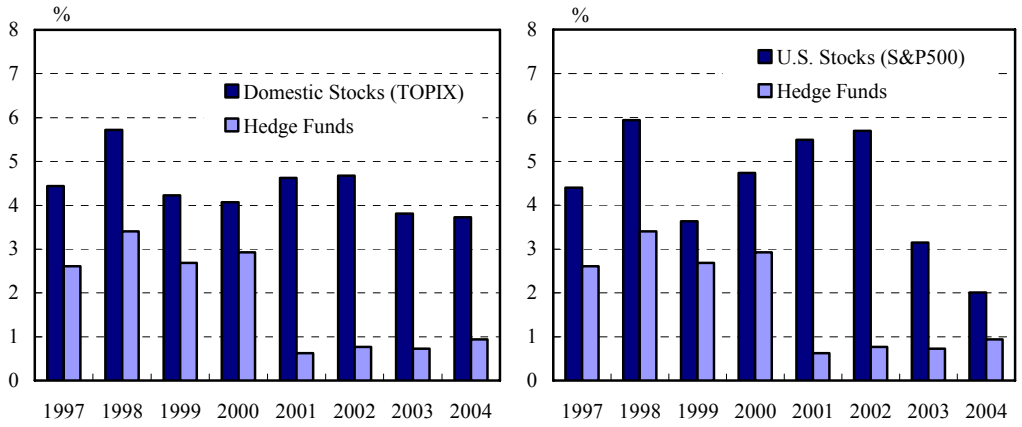
(Chart 15) Comparison of Returns between Bonds and Hedge Funds



Sources: Credit Suisse/Tremont, Bloomberg

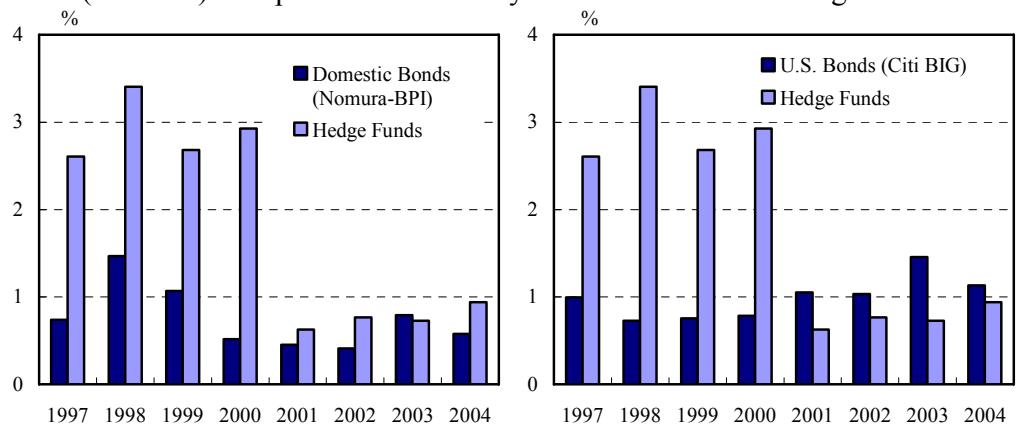
A comparison of volatility between stocks and hedge funds reveals that hedge fund volatility was lower in recent years (Chart 16). On the other hand, volatility of bonds and hedge funds were about the same (Chart 17).

(Chart 16) Comparison of Volatility between Stocks and Hedge Funds



Sources: Credit Suisse/Tremont, Bloomberg

(Chart 17) Comparison of Volatility between Bonds and Hedge Funds



Sources: Credit Suisse/Tremont, Bloomberg

In order to examine whether diversification effects can be expected by investing in hedge funds, the correlation between traditional assets and hedge funds is analyzed. The correlation is low in general (Chart 18), but a closer look reveals that the correlation between stocks and hedge funds, especially FoHFs, is relatively high.

(Chart 18) Correlation between Traditional Assets and Hedge Funds

		Domestic Stocks	U.S. Stocks	Domestic Bonds	U.S. Bonds
Hedge Funds		0.32	0.48	-0.13	0.10
	Convertible Arbitrage	0.12	0.11	0.07	0.06
	Dedicated Short Bias	-0.50	-0.78	0.22	0.09
	Equity Market Neutral	0.20	0.46	0.06	0.17
	Event Driven	0.47	0.55	-0.14	-0.10
	Fixed Income Arbitrage	0.20	-0.03	-0.09	0.06
	Global Macro	0.04	0.18	-0.06	0.20
	Long/Short Equity	0.39	0.57	-0.17	0.05
	Managed Futures	-0.19	-0.21	0.12	0.43
Funds of Hedge Funds		0.51	0.72	-0.14	-0.05

Notes: 1. Correlation calculated based on monthly rate of returns from January 1997 to March 2005, except for Funds of Hedge Funds, for which data from January 1997 to December 2004 is used.
2. "Domestic Stocks": TOPIX, "U.S. Stocks": S&P500, "Domestic Bonds": Nomura-BPI, "U.S. Bonds": Citigroup World BIG Bond Index, "Hedge Funds": Credit Suisse/Tremont, "Funds of Hedge Funds": Hedge Fund Research.

Sources: Bloomberg, Credit Suisse/Tremont, Hedge Fund Research

[Box 3] Limitations of Hedge Fund Indices and Databases

Hedge fund indices and databases have the following limitations that need to be taken into account when using information from these indices and databases in analyses.

Survivorship Bias: Database providers are inclined to provide information on only investable hedge funds, so indices may only include information on active hedge funds. Information on hedge funds that do not report because of poor performance, hedge funds that have liquidated, and hedge funds that stopped operations because poor performance lowered the effectiveness of their incentive-fee structure, for example, may not be incorporated in the database, and so the indices may overestimate the performance of hedge funds.

Self-selection Bias: Hedge funds can choose whether to provide information to databases. Hedge funds that have achieved superior returns and have a comfortable asset base for investment managers may stop reporting because advertising is the aim of hedge funds in providing information to databases.

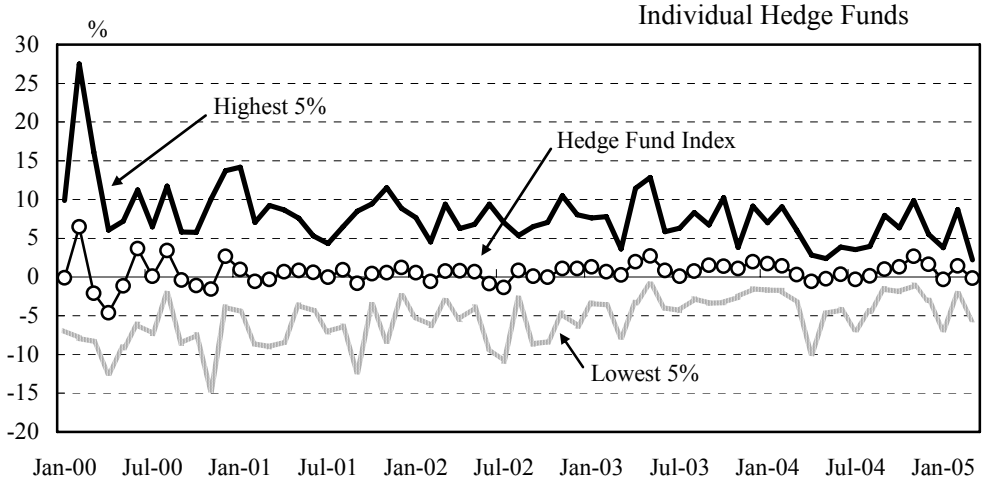
Backfill Bias: This bias occurs when a new hedge fund is introduced to the database. Database providers will ask the newly introduced hedge fund to provide historical performance data, but the hedge fund may only provide information for recent periods when they achieved the most positive returns.

Liquidation Bias: This bias exists because disappearing hedge funds may stop reporting returns and other information until their liquidation.

Double-counting Bias: This bias stems from the fact that one hedge fund may be counted under several categories in some indices. There are also cases where both FoHFs and single hedge funds invested by FoHFs are included in the indices.

No Oversight by Independent Third Parties: Many database providers use the information provided directly from investment managers or administrators without scrutiny by independent third parties.

(Reference) Comparison of Returns between Hedge Fund Index and Individual Hedge Funds



Notes: 1. The Hedge Fund Index used here is the Credit Suisse/Tremont Hedge Fund Index.
2. "Individual hedge funds" cover 971 single hedge funds that reported their returns to the Lipper TASS Database from January 2000 to March 2005 without a break in reporting. This chart shows the monthly rate of returns of the highest/lowest 5% of funds covered.

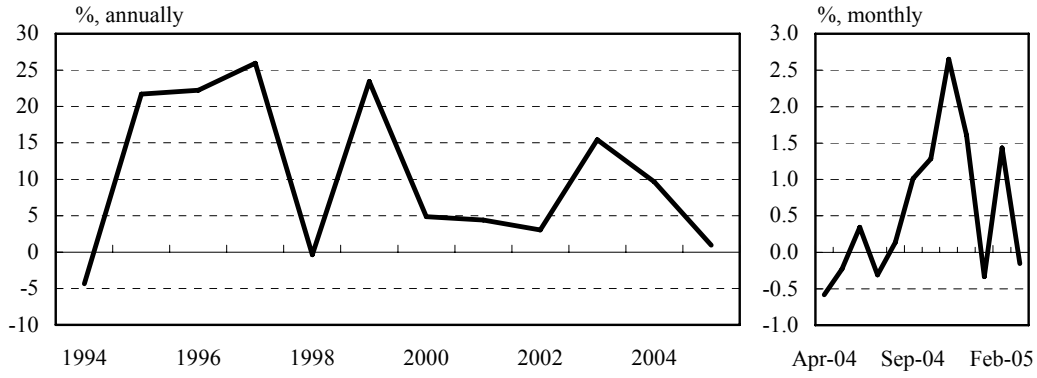
Sources: Credit Suisse/Tremont, Lipper TASS Database

4. Changes in Risk Characteristics of Hedge Funds

Factors supporting the growth of the hedge fund industry in recent years include characteristics of hedge fund performance relative to traditional assets in that "stable returns are expected with relatively low risks." However, this is a far cry from the hedge fund image earned in the past by such events as the LTCM crisis that hedge funds "take high risks in seeking high returns." This section reviews these aspects by comparing the risk characteristics of hedge funds in the late 1990s with those in recent times. It will also touch on risks that cannot always be captured by traditional risk assessment measures.

In the following analyses, the Credit Suisse/Tremont Hedge Fund Index and the HFRI Fund of Funds Composite Index compiled by the Hedge Fund Research are used (Chart 19). To distinguish changes in investment attitudes between recent years and the period when the LTCM crisis surfaced, the risk characteristics of hedge funds are analyzed for two periods: the first stage between January 1997 and December 2000, and the second stage between January 2002 and March 2005. Risk characteristics analyzed include returns, volatility, possibility of extraordinary gains/losses, and risks arising from holding several different assets including hedge funds in the portfolio.

(Chart 19) Performance of Hedge Fund Index



Notes: 1. The above figures show annualized/monthly returns of the Credit Suisse/Tremont Hedge Fund Index. For 2005, the annualized return is that between the beginning of January and the end of March.

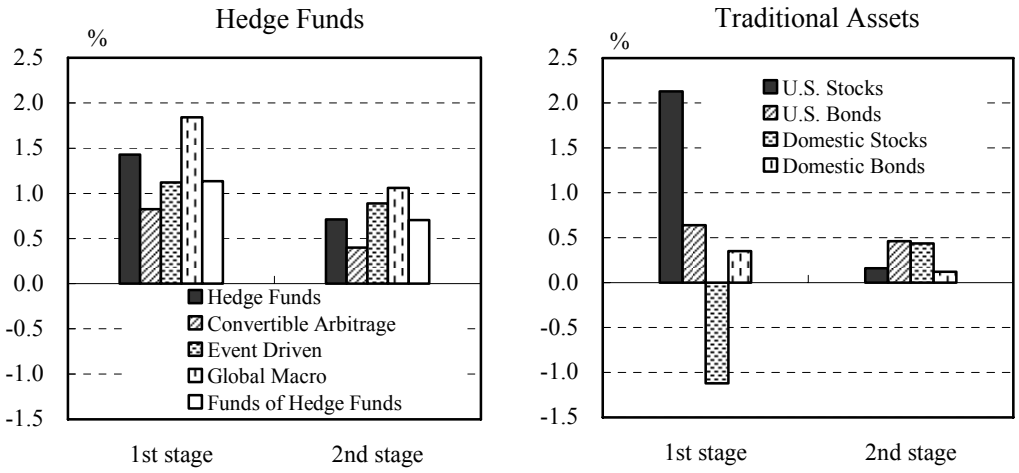
2. The Index covers funds that have at least 10 million U.S. dollars in assets under management, at least a 1-year track record, and current audited financial statements. The number of such funds is 900 or more.

Source: Credit Suisse/Tremont

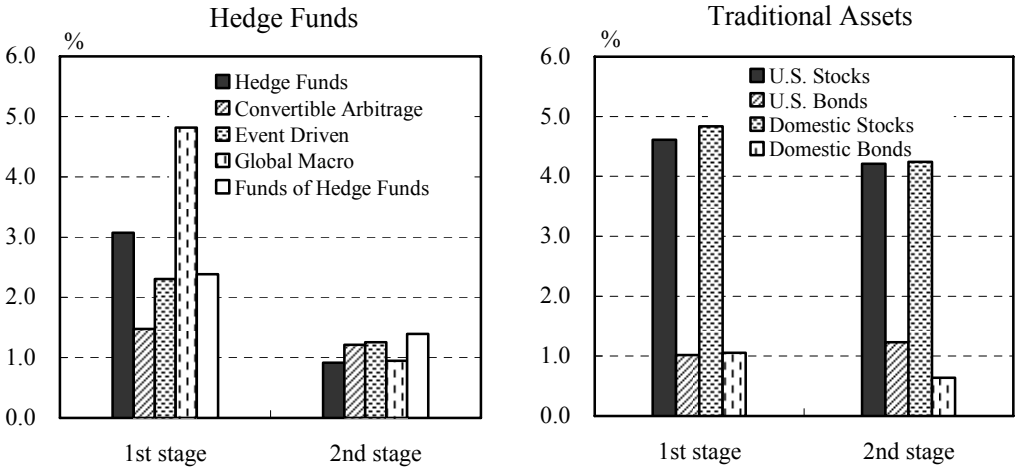
(1) Changes in Returns and Volatility

A comparison of the returns and volatility of hedge funds and traditional assets reveals that both returns and volatility of hedge funds declined from the first stage between January 1997 and December 2000 to the second stage between January 2002 and March 2005[11] (Charts 20, 21).

(Chart 20) Returns of Hedge Funds and Traditional Assets



(Chart 21) Volatility of Hedge Funds and Traditional Assets



Note: Returns and volatility are calculated based on the monthly rate of returns of the following indices. Data on funds of hedge funds are from January 1997 to December 2004. The same indices are used in Charts 22-26. "U.S. Stocks": S&P500, "U.S. Bonds": Citigroup World BIG Bond Index, "Domestic Stocks": TOPIX, "Domestic Bonds": Nomura-BPI.

Sources: Credit Suisse/Tremont, Hedge Fund Research, Bloomberg

[11] This analysis covers the index on the overall single hedge fund industry "Hedge Funds"; "Convertible Arbitrage," an arbitrage-type fund; "Global Macro," a directional fund; and "Event Driven" fund.

These results imply that compared to the late 1990s, the asset management policy of hedge funds changed to limit volatility and to take lower returns. Particularly, it should be noted that the volatility of hedge funds declined significantly while that of traditional assets remained unchanged.

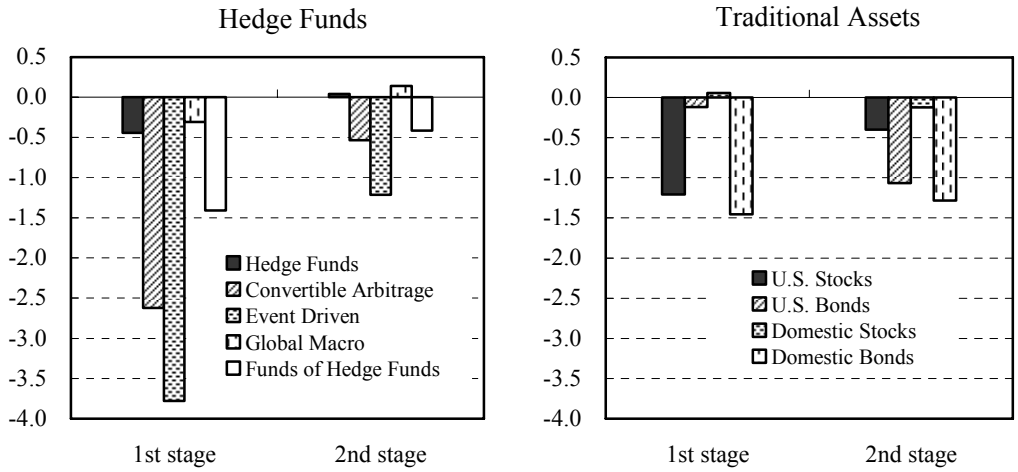
(2) Possibility of Extreme Losses

Traditional analyses such as comparison of average returns and volatility may not be sufficient to capture the risk characteristics of hedge funds. That is, skewness of return distributions may be another measure that should be examined, so that the possibility of incurring extreme losses can be examined by looking at whether the return distributions are negatively skewed (see the appendix for explanations on skewness and kurtosis of return distributions).

The skewness of return distributions of hedge fund indices is negative in the first stage, which means that there was a high possibility that "extreme losses will be incurred," but skewness is near zero or even positive in the second stage, signifying a decline in the possibility that "extreme losses will be incurred" (Chart 22). Meanwhile, the skewness of return distributions of traditional assets, except for U.S. stocks, is increasingly negative or shows almost no change. Therefore, the asset management policy of hedge funds seems to have changed to relatively "lowering the probability of extreme losses."

By strategy, return distributions of "Convertible Arbitrage" funds are negatively skewed compared to that of the overall index, because this strategy involves investing in bonds that tend to have negatively skewed returns based on the probability of default. Those of "Event Driven" funds also tend to be negatively skewed due to the characteristics of their investment assets.

(Chart 22) Skewness of Hedge Funds and Traditional Assets



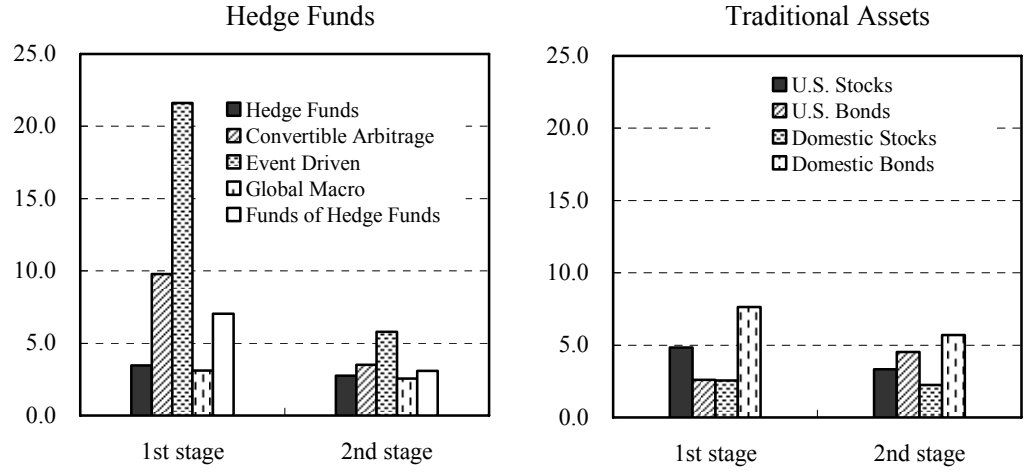
Sources: Credit Suisse/Tremont, Hedge Fund Research, Bloomberg

(3) Possibility that Returns Fluctuate Significantly

In addition to skewness, analysis of kurtosis, a measure of distribution fat-tails, also merits attention in understanding hedge fund risk characteristics. A fat-tail distribution has a high kurtosis, meaning that losses/gains that deviate significantly from the average returns are highly likely to be incurred.

An analysis of the kurtosis of returns on the hedge fund indices reveals that the kurtosis of "Convertible Arbitrage" funds, "Event Driven" funds, and "Funds of Hedge Funds" declined from the first stage to the second stage (Chart 23). That is, for these funds, the fatness of tails decreased in the second stage compared to the distributions seen in the late 1990s, which occurred with the LTCM crisis. Since there are some funds which do not show a decline in kurtosis of their return distributions, it may not be safe to draw conclusions, but this implies that many funds changed their asset management policy so as to reduce the possibility of incurring "losses/gains that deviate significantly from average returns."

(Chart 23) Kurtosis of Hedge Funds and Traditional Assets



Sources: Credit Suisse/Tremont, Hedge Fund Research, Bloomberg

(4) Possibility that Combination of Assets in the Portfolio Will Increase Risks

Investments in hedge funds have increased due to increased demand from investors who had invested in traditional assets such as bonds and stocks to diversify risks in their portfolio. Therefore, it is important to explore the possibility that hedge fund investments, as a combination with traditional assets, will increase risks.

As described above, the correlation between hedge funds and traditional assets is generally low, and risk reduction can be expected by creating a portfolio consisting of appropriate amounts of investments in hedge funds and traditional assets, according to the orthodox mean-variance approach. However, the risk of the overall portfolio is known to become larger or smaller with the extent of skewness of each asset and co-skewness – covariance between returns on certain assets and volatility of other assets – between assets in the portfolio.[12] Chart 24 shows the co-skewness among relevant assets. The co-skewness between returns on domestic bonds and hedge funds is positive in most cases (highlighted in the chart). Skewness of assets in the portfolio changed from negative to near-zero from the first stage to the second stage, which may imply that taking into account both skewness and co-skewness, the risk of the overall portfolio declined from the first stage to the second stage.

[12] For details, refer to Nishioka and Baba [2004]. When skewness and co-skewness of returns on underlying assets are negative, the risk of the overall portfolio becomes higher than the risk under the orthodox mean-variance approach. Co-skewness between the returns on hedge funds and domestic stocks/bonds is calculated based on the methods used in analyses by Nishioka and Baba.

(Chart 24) Risk Amplification Effects by Co-skewness between Hedge Funds and Domestic Stocks/Bonds

		Domestic Stocks		Domestic Bonds	
		Returns	Volatility	Returns	Volatility
Hedge Funds	Returns		− → −		− → +
	Volatility	− → +		− → +	
Convertible Arbitrage	Returns		− → −		− → +
	Volatility	− → −		− → +	
Event Driven	Returns		− → −		− → +
	Volatility	− → −		− → +	
Global Macro	Returns		− → −		− → +
	Volatility	− → +		− → −	
Funds of Hedge Funds	Returns		− → −		− → +
	Volatility	− → −		− → +	

Note: Arrows show the changes from the first stage to the second stage.

(5) Limits of Analyses and Some Reservations in Interpreting Analytical Results

The results of analyses imply that hedge fund risk characteristics, as a whole, have changed and that the possibility of hedge funds incurring extreme losses has declined in recent years as compared to the late 1990s when the LTCM crisis occurred.

In interpreting the results of the analyses, not only should the limitations of indices as described in Box 3 be considered, but also the economic and financial conditions should be taken into account. When the LTCM crisis occurred, the expected diversification effect of the portfolio by investing in hedge funds was not achieved, as market liquidity dried up in a wide range of markets and the normally low correlation of returns on hedge funds with other assets did not hold. In recent years, hedge funds tend to take positions in a wide range of markets so influences of a large shock might spread over various markets, and entail risks that are not necessarily captured by standard analyses.

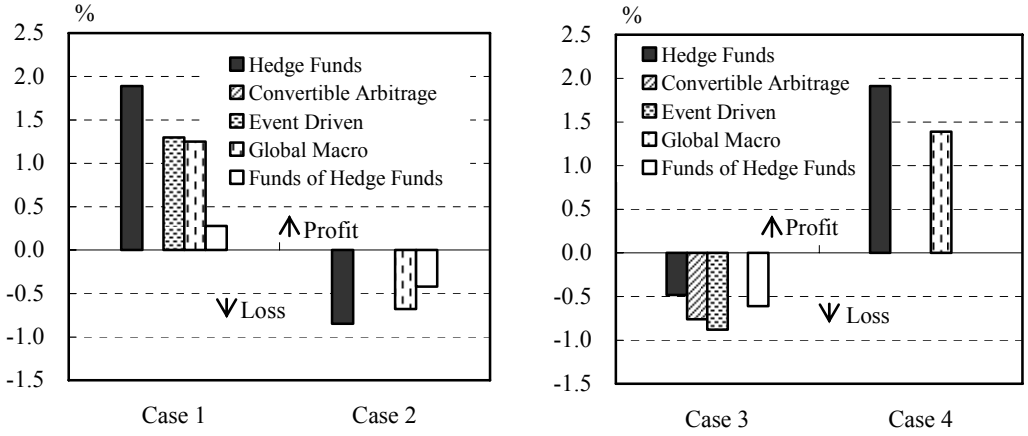
V. Factors that Influence Hedge Fund Returns

This section analyzes the factors that influence hedge fund returns (Chart 25). As pointed out in the previous section presenting the analysis on correlation between hedge funds and traditional assets, hedge fund returns are relatively strongly influenced by stock price movements. On the other hand, hedge fund returns are not strongly influenced by bond price fluctuations but may decline owing to increases in interest rates.

In addition, it is noteworthy that the past variance of fund returns seems to influence the future variance of the fund returns (Chart 26). Such characteristics of return variance merit further analyses from the perspective of transmission of risk, as hedge fund activities now extend over a wide range of markets.

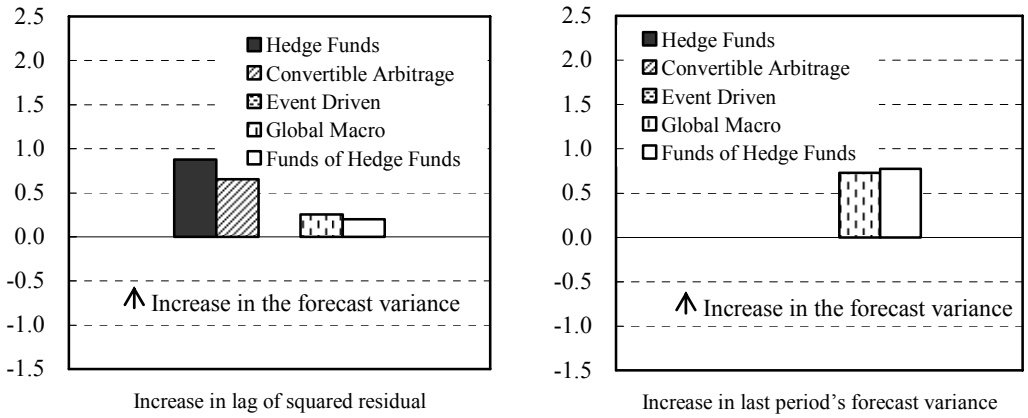
(Chart 25) Relationship between Expected Returns of Hedge Funds and Returns of Traditional Assets

[Case 1] 10% increase in stock price (S&P500)
[Case 2] 10% increase (rate of change) in interest rate (U.S. 10-year government bonds)
[Case 3] 10% widening (rate of change) in credit spread (BBB-rated U.S. corporate bonds)
[Case 4] 10% appreciation of Japanese yen against U.S. dollar



Note: Concerning strategies that do not set stock price or interest rate as an independent variable, or strategies whose coefficients are not statistically significant, bar charts are not shown. For details, refer to the Appendix.

(Chart 26) Relationship between Forecast Variance and
Lag of Squared Residual/Last Period's Forecast Variance



Note: For details, refer to the Appendix. "Event Driven" whose ARCH and GARCH results are not statistically significant is not shown in the chart. In addition, "Hedge Funds" and "Convertible Arbitrage" whose ARCH results are statistically significant but GARCH results are not statistically significant, are shown only in the left chart.

VI. Hedge Funds in a Highly Competitive Environment

1. Risk of Hedge Fund Liquidation

Information on "Graveyard" funds[13] that have stopped reporting their performance for some reason are registered in the Lipper TASS Database as well as information on actively reporting hedge funds. Of the total number of funds registered at the beginning of the year, Chart 27[14] shows the share of hedge funds that moved to the Graveyard Database by year-end. The chart also indicates the percentage that moved to the Graveyard Database because of "liquidation."

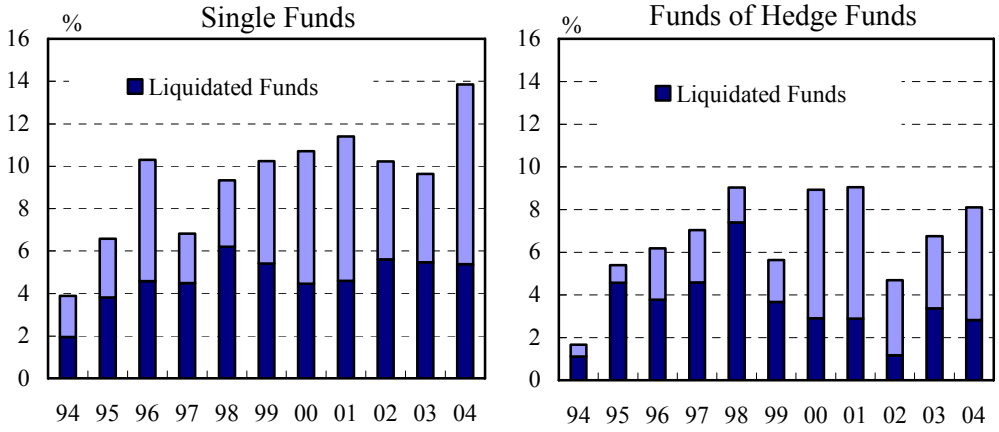
Of the single hedge funds that are registered in the Lipper TASS Database, 4% moved to the Graveyard Database by the end of the year in 1994, and 2% because of liquidation. On the other hand, in 2004, 14% moved to the Graveyard Database and more than 5% because of liquidation. In respect to FoHFs, the share of liquidated funds was also higher in 2004 than in 1994.

Although the hedge fund industry is still in the growth stage of its lifecycle, the fact that

[13] Information on funds that, for example, cease to operate for reasons such as liquidation, do not report for a certain period, are merged or acquired by other funds, or lose contact with database providers, are moved to the Lipper TASS Graveyard Database.
[14] Analysis here is based on similar analyses by Chan et al. [2005]

"more than 5% of the single hedge funds that are active at the beginning of a year are liquidated by the end of the year" is definitely a risk to be noted when investing in hedge funds. Interviews with hedge funds and investors in hedge funds indicate that hedge funds tend to be quickly weeded out by "survival of the fittest." This shows that investors need to avoid concentrating their investments in certain hedge funds, and hedge fund managers must be able to adapt to the competitive environment.

(Chart 27) Ratio of Hedge Funds Moved to the Graveyard Database



Sources: Lipper TASS Database, Lipper TASS Graveyard Database

Meanwhile, much progress has been made in risk management by counterparties of hedge funds in recent years, as new entrants and exits are numerous and winners and losers are quickly determined in the hedge fund industry. Specifically, counterparties use market values of exposures to each fund to evaluate counterparty exposures to hedge funds after netting, and in some cases, request liquid assets as collateral to cover their exposures to hedge funds. Accordingly, the risk that liquidation of individual hedge funds would widely affect markets may be somewhat contained.

2. Leverage

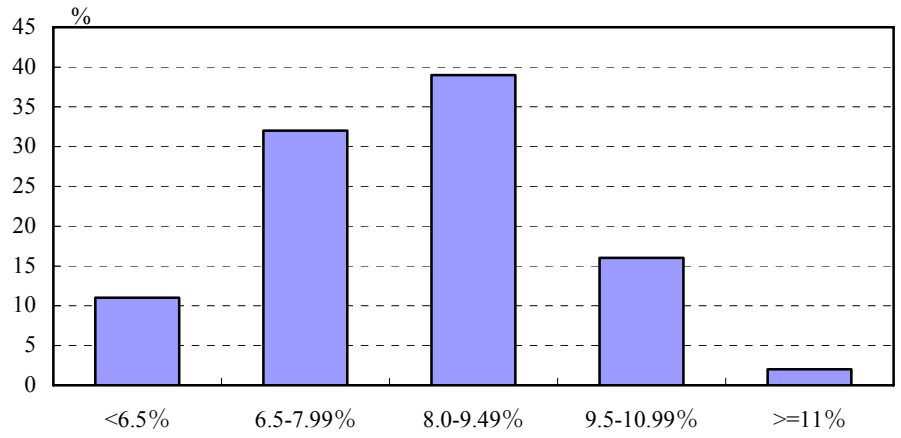
Individual hedge funds need to be able to adapt well to changes in market conditions and investor demands in order to survive in the competitive environment. Hedge funds may use leverage[15] to increase their investment assets, if investors expect them to achieve higher

[15] Leverage as defined in the Lipper TASS Database is used. Here, leverage is "the value of the hedge fund portfolio relative to the money in the fund received from subscriptions," as reported by hedge fund managers. However, this definition does not necessarily reflect risks of derivatives and other trades that are off-balance sheet exposures. How to measure leverage properly is an issue that requires further consideration.

returns. The following analyses explore how much leverage hedge funds have been employing in recent years as well as whether the incentive structure of hedge funds has been affecting leverage levels.

In recent years, hedge funds are not pressured to take excessive leverage in seeking high returns because expected returns for hedge fund investments have declined and become lower than returns on stocks (Chart 28). In addition, recently, investors have come to expect hedge fund investments to diversify risks in the overall portfolio, so investors tend to avoid investing in hedge funds that take excessive leverage.

(Chart 28) Expected Annual Net-of-Fee Returns of U.S. Institutional Investors



Note: Research results were released in September 2004.
Sources: Bank of New York, Quirk & Acito

Looking at levels of leverage taken by hedge funds, arbitrage-type-strategy funds use high leverage while directional-type-strategy funds such as "Long/Short Equity" funds use relatively low leverage (Chart 29). Because arbitrage-type-strategy funds take advantage of price anomalies between related securities such as bonds and stocks, some leverage is necessary to achieve a certain level of returns, although exposure to market risk is low relative to directional-type-strategy funds. This may apply to "Fixed Income Arbitrage" funds, especially funds that invest in Japanese bonds in the historically low interest rate environment.

(Chart 29) Leverage of Hedge Funds by Strategy

	Average Leverage	
		Japanese Assets
Convertible Arbitrage	167.1%	120.0%
Dedicated Short Bias	59.1%	N.A.
Equity Market Neutral	91.5%	137.3%
Event Driven	61.2%	45.0%
Fixed Income Arbitrage	408.8%	843.4%
Global Macro	112.5%	135.0%
Long/Short Equity	39.4%	47.1%
Managed Futures	62.9%	35.8%
Funds of Hedge Funds	26.52%	47.88%

Notes: 1. Based on hedge funds registered in the Lipper TASS Database as of March 2005. "Japanese Assets" covers hedge funds that invest in Japanese financial assets.
2. "Average Leverage" is the average level of leverage in the period between the fund establishment (or the start of reporting to the Lipper TASS Database) and the latest term.
Source: Lipper TASS Database

According to the results of analyses on the influence of factors such as compensation schemes and hedge fund performance on leverage,[16] there are no statistically significant relationships between incentive fees and leverage for most of the analyzed hedge fund strategies. The results also reveal that a high water mark[17] may induce the use of higher leverage in some strategies, while it tends to encourage investment managers to level out returns, thus generally contributing to declines in the level of leverage.

No statistically significant relationship is observed between leverage and returns for most strategies. Among the strategies which show statistically significant relationships, "leverage tends to decline/increase when returns become lower/higher," so the view that "high leverage strategies seeking high returns are used in order to offset past weak performance" is not supported.

VII. Regulatory Environment in the Hedge Fund Industry

This section reviews the regulatory environment in the hedge fund industry in the United States and the United Kingdom, where many investment managers are located, and in Japan, from the following three aspects: (1) investment managers, (2) investment vehicles and (3) sales to investors (see Attachment).

[16] Refer to the Appendix for details of the results of the analyses.
[17] Refer to Footnote 2 for explanations.

Since hedge funds typically seek to establish themselves as entities exempted from regulations, the requirements for exemptions from regulations are mainly described below. Basically, in most cases, regulatory requirements seem to vary depending on whether the hedge fund uses a public or private offering, on the number of investors, and on whether investors are professional or not.

1. The United States

(1) Regulations on Investment Managers

Since investment managers generally fit the definition of "investment adviser" under the Investment Advisers Act of 1940, they in principle must register with the Securities and Exchange Commission (SEC). However, the Act exempts an investment manager from registration with SEC if it (a) has had fewer than 15 clients[18] (counting a party with which the investment adviser has an investment advisory contract as a single client) during the preceding 12 months, (b) does not generally advertise itself to the public as an "investment adviser" to solicit clients, and (c) is not an adviser to any registered investment company (see (2)).[19] In such a case, the investment manager is exempted from obligations such as disclosure of information to investors and SEC, maintenance of books and records, and acceptance of examinations by SEC.

In addition, if the investment manager engages in commodity futures trading, registration with the Commodity Futures Exchange Commission (CFTC) is required under the Commodity Exchange Act. However, this registration is also exempted if certain conditions, such as the number of clients being not more than 15, are satisfied.

In principle, the Investment Advisers Act prohibits registered investment managers from receiving compensation from clients on a performance basis.[20] At the moment, most investment managers of hedge funds fulfill the above requirements for exemption from registration so performance-based compensation structure can be used.

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[18] An investment adviser that has its principal office and place of business in the United States must count all clients including non-U.S. residents. An investment adviser that has its principal office and place of business outside the United States must count only clients that are U.S. residents.

[19] Typically, the investment management business is operated so that no registration is required under the Investment Advisers Act. However, in practice, a number of investment managers, larger ones in particular, have voluntarily registered with SEC at their investors' requests.

[20] However, even if the investment manager is registered, if the investors of the vehicles managed by the manager are all qualified clients (individuals with an amount of investment managed by the manager of 750,000 U.S. dollars or more, or with a net worth of more than 1.5 million U.S. dollars, etc.), a performance-based compensation structure is available for that fund.

Regulations until recently are as described above. However, in October 2004, in view of the significant expansion in hedge fund assets, growth in the number of retail investors and an increasing number of hedge fund frauds, SEC amended the rules to place tighter restrictions on investment managers in order to prevent fraudulent activities.[21,22]

In the amended rules, the previous interpretation of the registration exemption provision of the Investment Advisers Act ((1) above) was changed so as to expand the scope of the registration requirement with SEC.[23] Consequently, cases where investment managers of hedge funds are required to register are expected to increase. Accordingly, the registered investment managers are required to develop compliance systems and submit to examinations by SEC, and if investors of a fund include retail investors, the registered investment managers of the fund are prohibited from receiving compensation on a performance basis.

Meanwhile, FRB and others have expressed concern that such regulations may not have the desired effect in preventing fraudulent conduct, and may lead to further tightening of regulations in the future, thereby having an adverse impact on the hedge funds' capacity to supply liquidity to the markets.

(2) Regulations on Vehicles

In order to operate a fund in the United States or for U.S. citizens, in principle, under the Investment Company Act of 1940, the vehicle[24] must be registered with SEC as an investment company. However, under the Act, registration with SEC is not required if the fund makes private offerings for 100 or less investors or if it makes private offerings only for investors who are qualified purchasers.[25]

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[21] The compliance date is February 1, 2006.

[22] The amended rules define a company as a "private fund" if: (1) The company is an investment company exempted from registration under the Investment Company Act; (2) the company permits investors to redeem their interests in the fund within 2 years of the purchase of such interests; and (3) interests in the company are offered based on investment managers' advisory skills. In effect, this is the first definition of a hedge fund (though such a term is not used) in the U.S. laws and regulations.

[23] Though SEC used to allow one managed fund to be counted as one client, under the amended rules, each and every investor who is part of a fund that satisfies certain conditions is counted as a client.

[24] In the United States, vehicles are often organized as limited partnerships.

[25] Individuals and asset management companies with investment assets of 5 million U.S. dollars or more.

The requirements for private offerings are specified in SEC rules under the Securities Act of 1933. If the investors are limited to accredited investors[26] (or there are no more than, or the fund reasonably believes that there are no more than, 35 investors who are not accredited investors and have knowledge and experience in financial and business matters), for practical purposes, such an offering is deemed a private offering.

Furthermore, the Securities Exchange Act of 1934 has a provision specifying that investment companies with 500 or more investors that have assets in excess of 10 million U.S. dollars are required to register with SEC.

Therefore, it follows that pursuant to the provisions of the Investment Company Act, the Securities Act, and the Securities Exchange Act, the requirement for a hedge fund to be exempted from registration is either (a) the fund is privately offered and the equity participants are limited to 100 or less accredited investors; or (b) the fund is privately offered and the equity participants are limited to 499 or less qualified purchasers.

Investment companies that do not satisfy the requirements for exemption of registration and thus need to register with SEC (registered investment companies) are subject to various restrictions on the use of short selling and other investment strategies as well as fundraising strategies. In addition, they are obliged to disclose their financial standing to investors semiannually within 60 days after the close of the reporting period.

(3) Regulations on Sales to Investors

In principle, the Investment Company Act and other laws and regulations are applied to sales of the funds in the United States or to U.S. investors in offshore markets.[27] However, as described earlier, since hedge funds are usually not registered investment companies, in many cases, information disclosure requirements and other regulations are not directly imposed on them.

2. The United Kingdom

(1) Regulations on Investment Managers

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[26] Individuals with a net worth above 1 million U.S. dollars or annual income in the last 2 years above 200,000 U.S. dollars (or joint income with their spouse above 300,000 U.S. dollars), or institutional investors with more than 5 million U.S. dollars in assets, etc.

[27] Since the U.S. securities regulations restrict global securities transactions in legal terms and are applied unless the exemption provision is applicable, even if a U.S. resident trades in an offshore market, the U.S. securities regulations shall apply (Sugiyama (2003) p.165).

In order to engage in the investment management business in the United Kingdom, authorization must be obtained from the Financial Services Authority (FSA) under the Financial Services and Markets Act. Similarly, authorization by FSA is also required for the establishment of collective investment schemes.[28]

(2) Regulations on Vehicles

In order to set up an investment vehicle in the United Kingdom, it is necessary to satisfy certain requirements[29] and to obtain authorization from FSA, but, since hedge funds do not usually satisfy these requirements, they cannot be established as vehicles in the United Kingdom.

However, in 2004, a new collective investment scheme (Qualified Investor Schemes (QIS)) was introduced for institutional and other experienced investors. The QIS makes it possible to set up vehicles in the United Kingdom even without satisfying traditional requirements, and to have the characteristics of hedge funds, such as performance-based compensation for investment managers and the creation of short positions.

(3) Regulations on Sales to Investors

In accordance with the Conduct of Business, financial services providers are required to engage in solicitation and sales best suited to each investor class based on the classification of investors, namely, market counterparties, intermediate customers and private customers.

When a hedge fund sells to investors in the United Kingdom, if the fund does not satisfy the requirements for obtaining authorization from FSA as described in (2) above, it is classified as an unregulated collective investment scheme and cannot be publicly offered to private

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[28] Any arrangements with respect to property of any description including money, the purpose or effect of which is to enable persons taking part in the arrangements to participate in or receive profits or income arising from the acquisition, holding, management or disposal of the property or sums paid out of such profits or income, and that have either or both of the following characteristics: (a) the contributions of the participants and the profits or income out of which payments are to be made to them are pooled; (b) the property is managed as a whole by or on behalf of the operator of the scheme (Section 235 of the Financial Services and Markets Act).

[29] To obtain authorization, it is necessary to satisfy the following conditions: (a) the fund's property is pooled and the investors have rights to the proceeds in proportion to the amount invested in the fund; (b) a proper diversification of risk is provided; (c) there is an independent depository who has control of the fund's assets and oversees the investment managers; (d) the amount of net assets is calculated on a daily basis, (e) the investors have the right to redeem their holding on request at least twice a month, (f) limitations on borrowing at an amount equivalent to 10% of the fund's value are observed and (g) prospectus and financial reports containing information on the fund's investment strategy and performance are published (Nomura/Hiramatsu (2002)).

customers. In such a case, the sale is made as a private offering and investors are limited to market counterparties and intermediate customers (as described earlier, in the case of the QIS, the offering is limited to institutional and experienced investors).

Meanwhile, if an investor makes an investment in an offshore fund directly, this will not be subject to the regulation under the Financial Services and Markets Act.

3. Japan

(1) Regulations on Investment Managers

As a general rule, the investment management business in Japan for hedge funds is subject to the regulations of the Investment Advisory Business Law.[30]

Under the law, when an investment manager is given the discretion to make an investment decision, it is deemed as a discretionary investment management business. In this case, authorization from the Prime Minister is required. In contrast, for example, if an investment manager only provides advice to key investment managers of funds located in overseas countries, it is only required to register with the Financial Services Agency. In such a case, it is exempted from the requirement of being a joint stock company, which is imposed on authorized firms. Also, compared to the case of an authorized investment adviser, a registered investment adviser is subject to less stringent requirements in terms of the filing of information and the engagement in additional business other than specified by the law.[31]

Furthermore, to set up an investment trust as a vehicle in Japan, the investment manager needs to obtain authorization for the investment trust management business under the Law Concerning Investment Trusts and Investment Corporations (the Investment Trust Law).

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[30] The title of the law may be translated as the "Law Concerning Regulation, etc. of the Investment Advisory Business Relating Securities." In addition, to invest in commodities in Japan, the managers have to comply with regulations for commodities investment advisers under the "Law Regarding Regulation of Business Concerning Commodities Investment."

[31] While authorized investment advisers are prohibited from engaging in any business other than investment trust management, corporate investment asset management, and securities and trust businesses unless separately authorized in association with businesses relating to the investment advisory business/discretionary investment management business (Article 31, Paragraph 1 of the Investment Advisory Business Law), there is no regulation on additional business for registered investment advisers, although they need to file notifications before engaging in the investment trust management, corporate investment asset management, and securities and trust businesses (Article 23 of the Law).

(2) Regulations on Vehicles

To form a vehicle for a hedge fund in Japan, an investment trust[32] is often used. In such a case, investments are to be made primarily in the specified assets, including securities, real-estate properties and derivatives, as prescribed by the law. If investments in securities account for more than half of the investment trust assets, such an investment trust is deemed a securities investment trust.

Regarding a securities investment trust, fewer restrictions are imposed on private offerings than on public offerings in terms of investment methods and investment choices. For example, there is no restriction on short selling and repurchase transactions. However, as in the case of publicly offered investment trusts, investment in FoHFs is prohibited and funding is limited to the payment of redemption or dividends of particular investment trusts.

(3) Regulations on Sales to Investors

Any sale of funds to investors in Japan is subject to the disclosure requirement of the Securities and Exchange Law. In the case of an investment trust or a foreign investment trust/investment corporation, the obligation of notification is imposed under the Investment Trust Law.

However, the Japanese Securities and Exchange Law and other relevant laws are applicable only in Japan and not to offshore funds' sales to domestic investors unless an act associated with solicitation of offer for acquisition of securities is committed in Japan (Article 2, body of Paragraph 3 and Paragraph 4 of the Securities and Exchange Law).

4. Other Issues

(1) Disclosure of Information

When applying regulations on disclosure of information required at sale, the location of the investor is the key factor to determine which jurisdictional regulations should apply. On the other hand, in most cases, subsequent information disclosure on an ongoing basis after the sale is usually subject to regulations of the location where the vehicle is established.

However, as described earlier, in practice, most hedge fund vehicles are designed and

[32] There is a view that it may be inappropriate to operate hedge funds by using a vehicle other than an investment trust, such as an undisclosed association, without obtaining authorization for the investment advisory or investment trust management business, because the hedge fund investment manager's activities can be deemed a discretionary investment management business.

operated to avoid regulations or is established in a jurisdiction where regulations are less stringent. Therefore, necessary information is typically disclosed in accordance with the contract between the fund and the investor, rather than based on regulations.[33]

(2) Retailization

In the United States, the regulatory authorities do not allow investment managers to earn performance-based compensation if they accept funds from general retail investors, and the regulatory authorities are considered to take rather a negative stance with respect to sales of hedge funds to retail investors. In the United Kingdom, sales of hedge funds to retail investors are not allowed. In Japan too, if a publicly offered investment trust is offered to retail investors, tighter regulations are imposed under the Investment Trust Law when compared with a private offering.

However, it should be noted that, in some European and Asian countries, in the course of legal developments in recent years, there is a move to allow sales to retail investors.

In Germany, since 2004, establishment of vehicles as well as sales on a private offering basis to both institutional and retail investors by hedge funds has been allowed, and public offering has been permitted for the FoHFs, both domestic and foreign, that satisfy certain criteria.[34] In France, investment in hedge funds in the form of FoHFs became possible in 2003.

In Singapore and Hong Kong,[35] the regulatory schemes were changed in 2002, and although there are restrictions on the minimum investment amount,[36] it became possible to sell hedge funds to retail investors.

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[33] However, if, for example, a hedge fund is sold in Japan as a privately placed foreign investment trust, unless requirements under the Investment Trust Law are satisfied, investment reports must be created and delivered (Article 33 of the Investment Trust Law).

[34] Since FoHFs in the Cayman Islands do not meet the criteria, they can only be sold on a private offering basis.

[35] In Singapore, when an investment manager of an offshore fund engages in the investment management business, if the number of funds under management is less than 30, a license is not required. In contrast, to engage in the investment management business in Hong Kong, there is no provision which exempts an investment manager from the licensing requirement.

[36] In Singapore, capital-guaranteed funds: no minimum investment amount requirement, FoHFs: 20,000 Singapore dollars, single hedge funds: 100,000 Singapore dollars. In Hong Kong, capital-guaranteed funds: no minimum investment amount requirement, FoHFs: 10,000 U.S. dollars, single hedge funds: 50,000 U.S. dollars (reduction to 30,000 U.S. dollars is under consideration).

As described above, the regulatory environment in the hedge fund industry varies depending on the country, and there are moves in both directions to revise the regulations: placing tighter restrictions on investment managers (the United States) and easing restrictions on the establishment of vehicles within the country (the United Kingdom). Regarding sales to retail investors, the views and handling differ in each country, and, as described above, some European and Asian countries have actively moved towards allowing sales to retail investors.

Despite the variations between countries, the legal developments now taking place around the world to respond to a growing interest in hedge fund investments may be seen as a new trend, as they take into consideration the new forms of investment. Although the directions of changes made in the revised regulations are not uniform, common ground can be found in that they are all the result of seeking an appropriate balance between ensuring a wide range of investment options for investors and protecting investors, based on the situation in each country, with a focus on investors.

VIII. Recent Issues Concerning Hedge Funds

Section IV showed that, in recent years, large amounts of assets have flowed into hedge funds and that the presence of hedge funds in the financial markets and financial systems has grown. In addition, the section looked at changes in the characteristics of hedge funds that, according to the track record, seemed generally to have mitigated incidents of large losses.

However, the risk positions of individual hedge funds may vary significantly. In addition, hedge funds may change their investment strategies toward higher risk in seeking higher returns when the global financial environment permits. With this in mind and taking into account the limitations in obtaining information, it is necessary to consider how to deal with hedge funds. This section describes efforts to address this issue, including recent discussions in international fora as well as empirical analyses, from the perspective of maintaining the stability of the financial markets and financial systems.

1. Counterparty Risk Management and Disclosure

After the LTCM crisis, several policy issues were pointed out in regard to market discipline on hedge funds in financial markets. Since then, steps have been taken in improving counterparty risk management. As prime brokers are the main counterparties of hedge

funds in providing credit lines and in derivatives transactions, the sophistication of risk management in prime brokers such as banks and securities firms strengthens and enhances the effectiveness of market discipline on hedge funds.

In this light, several recommendations were made in 1999 by financial authorities, including the Basel Committee on Banking Supervision (BCBS [1999b]) and the International Organization of Securities Commissions (IOSCO [1999]); and by relevant industries such as the Counterparty Risk Management Policy Group (CRMPG [1999]) consisting of 12 large banks and securities firms. Although outstanding issues still remain, measures based on these recommendations have been implemented to some extent, leading to steady progress in due diligence procedures, collateral requirements, and evaluation of counterparty exposure in transactions with hedge funds (BCBS/IOSCO [2001], the International Monetary Fund (IMF) [2004], Geithner [2004], Greenspan [2005]). As such, it is worth noting that conditions for market discipline to work well on hedge funds have been put in place.

On the other hand, concrete steps have not been taken in regard to public disclosure for investors, which is another means to promote market discipline. In this connection, the Multidisciplinary Working Group on Enhanced Disclosure (MWGED [2001]),[37] an international group of financial authorities, presented recommendations on enhancing disclosure practices by financial institutions as well as hedge funds in their report released in 2001. Five major hedge funds participated in the surveys on which this report was based. However, when the Joint Forum (2004)[38] tried to follow up in 2003 on the implementation status of recommendations in this 2001 report, it was not able to publish its findings because it could not secure cooperation from a sufficient number of hedge funds. Meanwhile, no country has placed statutory disclosure requirements on hedge funds.

As described above, progressive actions have not necessarily been taken to enhance transparency of hedge fund for general market participants, possibly due to the following reasons.

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[37] MWGED was established by BCBS, IOSCO, the International Association of Insurance Supervisors (IAIS), and the Committee on the Global Financial System (CGFS) to address issues related to enhanced public disclosure by financial institutions towards market participants.

[38] This group was formed in early 1996 by BCBS, IOSCO, and IAIS to take forward the work of the Tripartite Group of Bank, Securities and Insurance Regulators, mandated to discuss supervisory issues related to financial conglomerates.

First, to disclose trading positions would mean to give details on the highly sophisticated trading strategies of hedge funds that lead to returns, so there would naturally be concern over the possible significant erosion of hedge fund performance. Also, it is difficult to determine how to collect adequate data and to aggregate risk levels of individual hedge funds when requesting hedge funds to report risk levels rather than trading positions. In addition, positions of hedge funds often change in short periods, so the value of the information reported may be lost in the time taken for reporting.

Under such circumstances, the prevalent view among financial authorities and experts is that, in respect to information disclosure on hedge fund activities, it is more efficient and effective to have counterparties and investors obtain necessary information to manage risks from hedge funds than uniformly imposing statutory requirements on hedge funds (as shown in Geithner [2004], and Edwards [2004]). This approach may be efficient in the sense that counterparties' and investors' actions in managing risks, such as changing trading conditions or investment amounts based on the information provided by hedge funds, discipline hedge funds as well. For this to work, not just the range and quantity of information, but also the quality of information such as audited information, would be important for counterparties and investors.

Disclosure practices by hedge funds towards counterparties seem to have improved somewhat, as has disclosure towards investors in line with an increase in hedge fund investments by institutional investors (FSF [2002],[39] Box 4). Institutional investors typically have investment principles requiring them to access information on hedge funds that enables them to compare hedge funds with other investment products. The changes in the risk characteristics of hedge funds described in Section IV may have been induced by disciplinary effects of counterparties and investors.

2. Consideration of "External Effects"

As explained, it is important to make active use of market discipline on hedge funds through counterparty and investor actions in addressing the issues posed by hedge funds. However, the lessons of the Asian currency crisis in the late 1990s and the LTCM crisis should not be forgotten, where it became evident that hedge fund activities or failure may exert widespread "external effects" over not just the direct counterparties and investors to

[39] FSF, established in 1999, is comprised of members from financial authorities such as treasury departments, central banks, and supervisory authorities in G7 countries as well as international organizations such as IMF, the World Bank, OECD, and BIS.

hedge funds but also over other participants in financial markets and financial systems as well as the economy overall.

"External effects" from hedge funds can be divided into the following two main types: (1) large-scale failure of hedge funds inducing or accelerating market turmoil; and (2) hedge fund activities triggering market fluctuations in various markets. In regard to the former, spreading the use of adequate risk management techniques such as setting upper limits on counterparty exposure is expected to reduce the negative impacts of counterparty failure in derivative transactions. However, this does not preclude the possibility that non-negligible impacts will be exerted by a hedge fund failure from the closing of related positions in markets where the failed hedge fund was the prime provider of liquidity.

In regard to the latter, as hedge funds have become increasingly prominent in markets, they have contributed to enhancing market functions by using their diverse and sophisticated trading techniques as well as arbitrage trades across diverse markets. At the same time, such hedge fund behavior has widened the spread of price changes across markets, strengthening the link between price movements in markets that were considered uncorrelated with each other, and changing market participants' risk-taking behavior on a global scale. When hedge funds use leverage and their positions and strategies become concentrated in one direction, the external effects of hedge funds may be accelerated. Many of the existing empirical analyses concede that the influences of hedge funds in creating or aggravating past currency crises such as the Asian currency crisis seem to have been limited, aside from the 1992 incident where hedge funds were blamed for driving the British Pound out of the ERM. Because of limitations in data and other constraints, existing analyses do not necessary draw the same or distinct conclusions (Box 5).

One of the "external effects" that hedge funds provide financial markets is liquidity. Two of the recent empirical analyses using commodity futures data, although they do not share the same analytical methods, both conclude that hedge funds contribute to enhancing market depth and liquidity because their trading positions have different characteristics to those of other market participants.

Although views may be divided on whether direct regulations on hedge funds should be imposed, with a view to the "external effects," financial authorities including central banks need to pay due attention to the influences of hedge funds on financial markets and financial systems.

3. Recent Global Issues and Policy Responses

Recent developments in hedge funds have raised global concerns over the following risks.

First is the risk that hedge funds might be a source of market vulnerability, because of their more active use of high-risk strategies or deterioration of investment managers' quality which could follow increases in transactions by hedge funds themselves and diminished profit opportunities.

Second is the risk that hedge funds might trigger steep price fluctuations, especially in markets with low liquidity, when competition intensifies in the hedge fund industry and a growing number "exit" from markets as the weak are weeded out.

Third is the risk that prime brokers' counterparty-risk-management standards for hedge funds will be lowered as the prime brokerage business becomes excessively competitive.

Furthermore, there is the underlying concern that the emergence of risks such as those described above will go undetected because of constraints in quantitative data and information on hedge funds and limitations of analytical methods. Financial authorities including central banks in many countries have addressed this concern with efforts such as those described below. The Bank of Japan, in light of such developments, will make necessary efforts such as enhanced monitoring of financial markets, through discussions with financial authorities of various countries in international fora to deepen understanding on the price discovery process in financial markets taking into account the influences of hedge funds.

One of the responses that financial authorities might take in this direction is to review risk management practices in financial institutions such as banks and securities firms, as these institutions are often counterparties and investors to hedge funds. As mentioned in this paper, risk management by counterparties and investors is an important tool in disciplining hedge fund activities. If risk management systems of counterparties and investors related to trades and investments in hedge funds could be made more sophisticated through examination by financial authorities, such disciplinary effects could be made more effective. In addition, as banks and securities firms are often primary providers of payment and securities settlement services, ensuring their soundness through adequate risk management systems is crucial in protecting financial markets and financial systems from major disruptions when there are large shocks.

Another response is international efforts to monitor hedge fund activities in financial markets properly. Financial authorities including central banks are exchanging monitoring information on hedge funds in financial markets of their countries on various levels in international fora. In addition, as there is room to improve databases on hedge funds so that meaningful quantitative analyses founded on reliable data to accurately understand hedge fund activities and risk characteristics can be conducted, it is important to support efforts to improve existing databases.

[BOX 4] Disclosure of Information to Investors

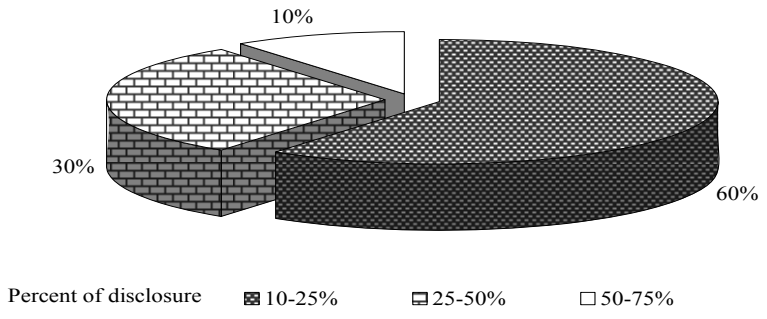
The level of information disclosure sought by hedge fund investors differs considerably among investors. Some investors are satisfied with reports of some risk indicators based on certain assumptions in addition to monthly net asset value; others require frequent detailed reports on the fund's investments in order to conduct their own sophisticated analyses.

In particular, detailed information on the positions held by the fund is necessary in order to (1) conduct integrated risk management with other portfolios, and (2) monitor whether an investment manager adheres to the stated investment strategy or style.

The aims of (1) above are to check the correlation with other portfolios and the degree of concentration in particular brands or business sectors of shares or bonds. As for (2) above, it aims at checking whether the investment manager has used investment strategies and methods that entail risks beyond the scope assumed by the investors. This could occur even though broad investment strategies and guidelines for investment mandates, for example, "the cap on borrowing shall be equivalent to net asset value" and "investments in unlisted shares may be made up to x% of the net asset value" are specified in the contract.

As shown in the figure below, some surveys indicate that details of individual positions are not sufficiently disclosed to investors. However, some investors and funds, though limited to large exposures, are making efforts towards disclosure of individual invested securities and positions.

What percentage of your hedge fund managers provide position-level transparency?



Sources: The Investor Risk Committee's Survey [conducted in June 2002], Rahl [2003, p.158]

[BOX 5] Some Empirical Studies on Hedge Funds

There are a number of quantitative analyses which explore whether hedge fund trading causes market disruption. Fung and Hsieh [2000] estimate positions held by hedge funds on Black Monday in 1987 when stock values plunged spontaneously worldwide, during the ERM crisis in 1992, during the steep price rise in 1993 and the subsequent steep fall in 1994 in the bond market, during the Mexico Crisis in 1994–1995 and during the Asian crisis in 1997, to examine the impact of sudden market changes. Since hedge funds' positions are not disclosed, Fung and Hsieh roughly estimate the positions based on publicly available data, such as monthly returns and the amount of assets under management in hedge funds.

They conclude that (1) although hedge funds exerted substantial market impact during the ERM crisis and the abrupt changes in the bond market in 1993–1994, they had little influence on markets seen on Black Monday or during the Mexico and Asian crises, as their exposures were not significant, either in absolute terms or relative to other market participants. In addition, (2) the use of a positive feedback trading strategy – buying when prices rise and selling when prices fall, which is likely to amplify fluctuations in the market, was not observed, except for in 1993 when the bond market rose sharply. Furthermore, (3) even when hedge funds had an impact on market fluctuations, cases where they apparently caused market prices to deviate from economic fundamentals were not observed.

These conclusions are similar to those of Eichengreen and Mathieson [1998], except for the results relating to the abrupt changes in the bond market in 1993–1994 (no analysis was conducted on the events during Black Monday). Their paper concludes that although hedge funds played a leading role in the ERM crisis, they did not have control over the market and were not largely involved in the sudden changes seen in the bond market, or during the Mexico and Asian crises. In addition, it argues that hedge funds are less likely to herd other investors since they view their trading strategy as proprietary and take great pain to prevent disclosure of their positions, and no evidence was found to support the theory that a positive feedback strategy was employed.

Brown et al. [1998] study the Asian crisis and conclude that although there were periods when hedge funds had huge positive and negative exposures to Asian currencies, these bore no relation to moves in the exchange rates.

Since the beginning of 2005, a number of empirical studies on the investment behavior of hedge funds in commodity futures trading (crude oil and natural gas) have been published. NYMEX [2005, New York Mercantile Exchange] indicate that, based on undisclosed data of large traders, (1) hedge fund activity does not comprise a large share of trading volume or open interest in the market;

(2) they tend to hold positions significantly longer than the rest of the market; and (3) hedge funds appear to reduce price volatility in the markets. Also, Haigh et al. [2005] use the same undisclosed data as above and conclude that (1) hedge funds' positions have a negative correlation with those of other market participants; (2) results of a multivariate statistical analysis reveal that changes in hedge funds' positions respond to changes in the other market participants' positions and not vice versa; and (3) changes in the prices have no correlation (natural gas) or negative correlation (crude oil) with hedge funds' positions. These two empirical studies interpret these results as consistent with the view that hedge funds play a valuable role in providing liquidity in the market rather than causing market disruption.

Appendix: Background Details on Statistical Methods and Models

1. Skewness and Kurtosis of Probability Distribution of Returns

In Section IV.4.(2) and (3), we analyze hedge fund performance using skewness and kurotosis of distribution. We briefly review skewness and kurtosis below.

Skewness of a stochastic valuable, x_i, is defined as follows. It is a measure of asymmetry of distribution, and that of a normal distribution is zero. σ_i is the standard deviation of assets *i*.

$$Skewness = \frac{E\left[x_i - E\left(x_i\right)\right]^3}{\sigma_i^{\,3}}$$

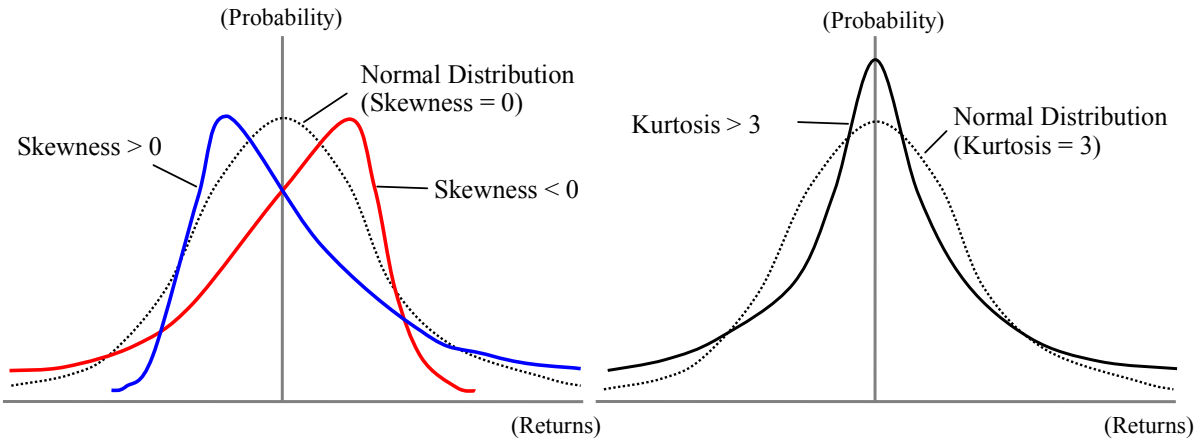
The shape of a distribution that has positive/negative skewness is shown in Appendix Chart 1 (left). Positive/negative skewness means that a distribution has a long right/left tail. In other words, a return distribution that has positive/negative skewness has a high probability of a small loss/gain and a low probability of a large gain/loss.

On the other hand, kurtosis of a stochastic valuable, x_i, is defined as follows. It measures the peakedness or flatness of distribution, and that of a normal distribution is 3.

$$Kurtosis = \frac{E\left[x_i - E\left(x_i\right)\right]^4}{\sigma_i^{\,4}}$$

Appendix Chart 1 (right) shows the shape of a distribution with large kurtosis. If kurtosis becomes larger, the distribution is peaked and has a fat-tail. In this case, the probability of extreme gains or losses deviating from the mean becomes higher.

(Appendix Chart 1) Skewness/Kurtosis and Probability Distribution



2. Co-Skewness and Risk Premium[40]

In Section IV.4.(4), we analyze the risks in the overall portfolio using co-skewness. We briefly review co-skewness below.

Co-skewness between returns on assets A (r_A) and B (r_B) is defined as follows.

$$co-skew_{ABB} \equiv E\left[\left(r_A - E\left[r_A\right]\right)\left(r_B - E\left[r_B\right]\right)^2\right] = \mathrm{cov}\left(r_{A,}\sigma_B^2\right) \qquad (1)$$

σ_i^2 is the variance of asset *i* (*i* =A, B) and cov (X,Y) is the covariance between X and Y.

Next, we review the relationship between skewness/co-skewness and risks of the overall portfolio. Total asset holdings of an investor at *t+1*, W_{t+1}, and portfolio returns, r_p, can be written as follows:

$$W_{t+1} = \left(1 + r_p\right)W_t \qquad (2)$$

$$r_p = r_f + w_A\left(r_A - r_f\right) + w_B\left(r_B - r_f\right) \qquad (3)$$

where r_f denotes the risk-free interest rate, and $w_A\left(w_B\right)$ denotes capitalization weights of assets A (B). Letting $u\left(W_{t+1}\right)$ be the investor's utility function, we can write the optimization problem of the investor's expected utility as follows:

Max $\quad E\left[u\left(W_{t+1}\right)\right]$

s.t. equations (2) and (3).

The first-order conditions can be written as:

$$E_t\left[u'\left(W_{t+1}\right)\left(r_i - r_f\right)\right] = 0 \qquad , \quad i\text{= A, B} \qquad (4)$$

Now, we specify the investor's expected utility function as follows:

$$E\left[u\left(W_{t+1}\right)\right] \equiv E\left[W_{t+1}\right] - \frac{\lambda}{2}E\left[W_{t+1} - E\left[W_{t+1}\right]\right]^2 + \frac{\delta}{3}E\left[W_{t+1} - E\left[W_{t+1}\right]\right]^3 \qquad (5)$$

In the case of two assets, the third central moment is generally written as follows:

$$E\left[W_{t+1} - E\left[W_{t+1}\right]\right]^3 = E\left[\left\{w_A\left(r_A - E\left[r_A\right]\right) + w_B\left(r_B - E\left[r_B\right]\right)\right\}\cdot W_t\right]^3$$

$$= \left[w_A^3\sigma_A^3 skew_A + w_B^3\sigma_B^3 skew_B + 3w_A^2 w_B\,\mathrm{cov}\left(\sigma_A^2, r_B\right) + 3w_B^2 w_A\,\mathrm{cov}\left(r_A, \sigma_B^2\right)\right]\cdot W_t^3$$

* $\quad skew_i = \dfrac{E\left[r_i - E\left[r_i\right]\right]^3}{\sigma_i^3}$ $\qquad$ *i*=A, B $\quad$ (Skewness of asset *i*)

[40] This appendix is quoted from Nishioka and Baba [2004]. For details, refer to the paper.

Given the above equation and equation (5), the first-order conditions (4) can be rewritten as follows:

$$\frac{\partial E[u(W_{t+1})]}{\partial w_A} = E[r_A] - r_f - \lambda[w_A\sigma_A^2 + w_B\rho\sigma_A\sigma_B] + \delta[w_A^2\sigma_A^3 skew_A + 2w_A w_B \operatorname{cov}(\sigma_A^2, r_B) + w_B^2 \operatorname{cov}(r_A, \sigma_B^2)] = 0 \quad (6)$$

$$\frac{\partial E[u(W_{t+1})]}{\partial w_B} = E[r_B] - r_f - \lambda[w_B\sigma_B^2 + w_A\rho\sigma_A\sigma_B] + \delta[w_B^2\sigma_B^3 skew_B + 2w_A w_B \operatorname{cov}(r_A, \sigma_B^2) + w_A^2 \operatorname{cov}(\sigma_A^2, r_B)] = 0 \quad (7)$$

From equations (6) and (7), we can derive the following demand functions for both assets A and B:

$$E[r_A] - r_f = \lambda\rho\sigma_A\sigma_B w_B - \delta w_B^2 \operatorname{cov}(r_A, \sigma_B^2) + [\lambda\sigma_A^2 - 2\delta w_B \operatorname{cov}(\sigma_A^2, r_B)]w_A - \delta\sigma_A^3 skew_A w_A^2 \quad (8)$$

$$E[r_B] - r_f = \lambda\rho\sigma_A\sigma_B w_A - \delta w_A^2 \operatorname{cov}(\sigma_A^2, r_B) + [\lambda\sigma_B^2 - 2\delta w_A \operatorname{cov}(r_A, \sigma_B^2)]w_B - \delta\sigma_B^3 skew_B w_B^2 \quad (9)$$

From equations (8) and (9), when skewness and co-skewness are negative, the risk premium to be demanded by the investor is higher than those based on the standard mean-variance approach (the sum of the first and third terms in equations (8) and (9)).

3. Estimation of Hedge Fund Returns

In Section V of the paper, we conduct regression analyses by setting hedge fund performance (returns based on the Credit Suisse/Tremont Hedge Fund Index) as a dependent variable and setting the U.S. stock price (S&P500), implied volatility (S&P500), U.S. interest rate (10-year government bonds), U.S. credit spread (BBB-rated corporate bonds) and foreign exchange rate (Japanese yen/U.S. dollar) as independent variables. Both independent and dependent valuables are logarithmic differences (monthly rate of changes). In this paper, we omit the results of estimating the performance of hedge fund strategies that show statistically significant relationships between foreign exchange rate (U.S. dollar/Euro) or commodities (DJ-AIG).

As the returns of some strategies have large kurtosis and their distributions have a fat-tail, variances may vary within the estimated period. Therefore, we estimate hedge fund returns based not only on ARCH (Autoregressive Conditional Heteroscedasticity) Model but also on GARCH (Generalized ARCH) Model. The basic concept of ARCH Model is that the conditional variance of the error term at time *t* depends on the realized values of the squared error terms in previous time periods, and the basic concept of GARCH Model is that the conditional variance of the error term at time *t*

depends on the realized values of the squared error terms as well as conditional variances in previous time periods. Specifically, in the analysis concerning returns of Hedge Funds, Convertible Arbitrage, Global Macro and Funds of Hedge Funds for which the results of ARCH/GARCH Model are valid (statistically significant), we can show that once the variance of returns becomes high, variance may be high for extended periods (volatility clustering).

(Appendix Chart 2) Estimated Results of Hedge Fund Returns

	Hedge Funds	Convertible Arbitrage	Event Driven	Global Macro	Funds of Hedge Funds
Constant	0.007	0.007	0.009	0.012	0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
S&P500	0.189	-0.001	0.130	0.125	0.280
	(0.000)	(0.963)	(0.000)	(0.011)	(0.000)
Implied Volatility	-	-	-	0.025	-
				(0.023)	
U.S. Interest Rate (10-year Government Bonds)	-0.085	-	-	-0.068	-0.042
	(0.001)			(0.010)	(0.018)
U.S. Credit Spread (BBB-rated Corporate Bonds)	-0.048	-0.076	-0.088	-	-0.061
	(0.004)	(0.000)	(0.000)		(0.000)
Japanese yen/U.S. dollars	0.191	-	-	0.139	-
	(0.000)			(0.023)	
Commodities (DJ-AIG)	0.093	-	-	-	-
	(0.001)				
	ARCH(1)	ARCH(1)		GARCH(1,1)	GARCH(1,1)
Constant	0.000	0.000		0.000	0.000
	(0.006)	(0.004)		(0.354)	(0.559)
ε_{t-1}^2	0.876	0.654		0.255	0.200
	(0.018)	(0.051)		(0.048)	(0.016)
σ_{t-1}^2	-	-		0.729	0.775
				(0.000)	(0.000)

(Note) ε_{t-1}^2 : Squared error term at time *t-1*. σ_{t-1}^2 : Variance at time *t-1*.
Sample period: January 1997 to March 2005 (December 2004, Funds of Hedge Funds)
Estimation Method: Maximum Likelihood.
Estimation results in gray boxes are figures that are not statistically significant at the 10% level.
Figures in parentheses show P-values.

4. Governance Structure and Hedge Fund Leverage

In relation to Section VI.2, we analyze whether the governance structure of hedge funds, such as compensation structure, has impacts on their leverage. Here, we conduct regression analysis based on the Tobit Model (Censored Regression Model), while setting average leverage (%) as the dependent variable and setting incentive fee rate (%), high water mark (dummy variable)[41], and annualized rate of return (dummy variable)[42] as independent variables. We employ the Tobit Model because leverage is not considered to fall below zero (a dependent variable must be zero or positive), according to the data on the leverage reported to the Lipper TASS Database. However, the Tobit Model does not work efficiently without large samples. Note that appropriate results might not be provided in this analysis because most strategies do not have enough number of samples.

(Appendix Chart 3) Estimated Results by Tobit Model

	Hedge Funds (Single Funds)							Funds of Hedge Funds
	Convertible Arbitrage	Equity Market Neutral	Event Driven	Fixed Income Arbitrage	Global Macro	Long/Short Equity	Managed Futures	
Constant	-1.139	-1.658	0.460	-9.076	-1.012	-0.617	-0.594	-1.375
	(0.565)	(0.115)	(0.753)	-0.072	(0.340)	(0.086)	(0.297)	(0.000)
Incentive Fee	15.600	2.739	-13.445	41.151	7.509	-1.157	4.235	2.576
	(0.125)	(0.608)	(0.078)	(0.052)	(0.155)	(0.517)	(0.141)	(0.065)
High Water Mark	-0.654	1.535	1.290	4.171	0.161	0.521	-0.240	0.488
	(0.196)	(0.004)	(0.026)	(0.105)	(0.787)	(0.002)	(0.478)	(0.009)
Annualized Rate of Return	-0.709	0.889	0.658	-2.678	-2.145	-0.485	-0.612	0.075
	(0.295)	(0.151)	(0.350)	(0.466)	(0.035)	(0.045)	(0.282)	(0.784)
Uncensored Observations	73	60	72	78	57	249	97	138
Total Observations	99	117	194	104	102	680	170	476

(Note) Figures in parentheses show P-values.

[41] Hedge funds adopting a high water mark are set as 1. Others are set as 0.
[42] Hedge funds whose annualized return in 2004 is in the lowest 10% are set as 1. Others are set as 0.

(Attachment) The Legal System Concerning Hedge Funds in the United States, the United Kingdom, and Japan

		United States	United Kingdom	Japan
Investment Manager	Requirements for engaging in the investment management business	○ To engage in the investment management business for U.S. citizens, registration with the Securities and Exchange Commission (SEC) is required, in principle. － Exemptions: Registration is exempted if all the following conditions are satisfied. [Section 203 (b) of the Investment Advisers Act]: ·For the last 12 months, the number of clients has been less than 15. ·Does not generally advertise itself to the public. ·Advises unregistered investment companies only. → Investment advisers to registered companies are subject to the registration requirement. ○ To deal with commodity futures trading, registration as a Commodity Pooling Operator (CPO) or Commodity Trading Advisor (CTA) with the Commodity Futures Exchange Commission (CFTC) is required in principle. － Exemption: The number of clients is not more than 15, etc. ○ To organize a collective investment scheme in the form of a limited partnership in the United States, no authorization is required.	○ To engage in the investment management business in the United Kingdom, authorization by the Financial Services Authority (FSA) is required. [Sections 19 and 22 and Schedule 2 of the Financial Services and Markets Act] ○ To establish a collective investment scheme in the United Kingdom, authorization by FSA is required. [Sections 19 and 22 and Schedule 2 of the Financial Services and Markets Act]	○ To engage in the investment management business in Japan, the requirements under the Investment Advisory Business Law must be satisfied. ·Discretionary investment management business: Authorization from the Prime Minister. ·Advisory business: Registration with the Financial Services Agency. ·Representative office of a foreign investment advisory service provider: Notification to the Financial Services Agency. ○ To set up and operate a vehicle (investment trust) in Japan on its own, authorization must be obtained from the Prime Minister as an investment trust management service provider. ○ To make investments in commodities, the requirements of the "Law Regarding Regulation of Business Concerning Commodities Investment" must be satisfied. ·Commodities investment advisory business: Permission from the relevant minister. ·Commodities investment selling business: Permission from the relevant minister.
	Special tax exemption for offshore funds for having investment managers	○ Taxes in the United States on profits from the offshore fund's investment activities in the United States are exempted.	○ If an investment manager satisfies certain requirements, taxes in the United Kingdom on profits from the offshore fund's investment activities in the United Kingdom are exempted.	○ There is no provision to exempt taxes on offshore funds that have investment managers in Japan. － Judged on the basis of the investment managers' activities.
	Performance-based compensation paid to investment managers	○ Prohibited in principle. [Section 205 (a) (1) of the Investment Advisers Act] － However, possible if all investors are qualified clients. [Rule 205-3 under the Investment Advisers Act]	○ Possible.	○ Possible.

		United States	United Kingdom	Japan
Vehicle	Vehicles available under domestic laws and regulations	○ A limited partnership or a limited liability company (LLC), etc. ― For a fund to solicit investors in the U.S., registration with SEC as an investment company is required unless the following conditions are satisfied: ·Private offerings for 100 investors or less. [Section 3 (c) (1) of the Investment Company Act] ·Private offerings for qualified purchasers only. [Section 3 (c) (7) of the Investment Company Act] ― Investment companies with 500 or more investors and assets worth in excess of 10 million U.S. dollars are required to register with SEC. [Section 12 (g) of the Securities Exchange Act]	○ A collective investment scheme for qualified investors (Qualified Investor Schemes (QIS)). ― A scheme for institutional/experienced investors.	○ Investment trust (securities investment trust) ― Investment in securities must account for more than 50% for a securities investment trust. ― Real estate and financial derivatives transactions may be conducted up to but not including 50%.
	Short selling, etc.	○ Possible. ― However, in the case of a registered company, a prospectus regarding short selling and other disclosure materials must be prepared.	○ Possible.	○ Possible. ― However, in the case of a public offering, the total market value of open interest of margin transactions, and of equities in case of equity borrowing, should be within the net asset value.
	Leverage	○ No restriction for unregistered companies. ― Leverage is possible by borrowing, futures, options and other derivatives. ○ Registered companies are subject to restrictions. ― Borrowing from a bank only for open-end investment companies. ― Closed investment companies are allowed to use bonds, etc., to raise funds in addition to borrowing from a bank.	○ Borrowing can be made up to 100% of the net asset value (NAV).	○ Private offering (for professionals/small groups): Funding is limited to the payment of redemption or dividends for particular investment trusts, otherwise no restrictions. ― Public offering: Funding is limited to the payment of redemption or dividends for particular investment trusts. Up to the total NAV for margin trading (selling), borrowing of shares, repurchase transactions, borrowing of bonds, short selling of bonds, and repurchase agreement transactions. Derivatives are allowed until the unrealized losses reach 50% of the total NAV.

		United States	United Kingdom	Japan
Regulations on sales	Regulations on sales (private offerings and public offerings)	○ Public offerings are subject to regulations under the Securities Act. － Registration with SEC and distribution of a prospectus is required. ○ An offering for accredited investors only (or for 35 or less investors who satisfy certain conditions, or the fund reasonably believes so) is considered as a private offering and neither registration with SEC nor distribution of a prospectus is required. [Rule 506 of Regulation D under the Securities Act]	○ Investors are classified into market counterparties, intermediate customers and private customers. [Conduct of Business (COB) 4.1] － Unregulated schemes (including hedge funds) may be offered only to market counterparties, intermediate customers, and private customers who are upgraded to intermediate customers on the grounds that they have enough knowledge and experience in investment in securities. [COB3.11 and 3 Annex 5R] － It is prohibited to sell hedge funds to private customers.	○ Disclosure is required upon issuance under the Securities and Exchange Law. － In the case of a public offering, obligations include preparing and filing of a securities registration statement and prospectus. － In the case of a private offering, there is an obligation to file a securities notice. ○ Notification obligation under the Investment Trust Law － Applicable to both public and private offerings.
	Regulations on funds brought from offshore	○ No particular restriction on funds brought from offshore. － Subject to the same laws as domestic funds. ○ No public offering of offshore funds is allowed unless it is a registered investment company with permission by SEC. [Section 7 (d) of the Investment Company Act]	○ No particular restriction on funds brought from offshore. － Subject to restrictions if it is a scheme similar to a domestic collective investment scheme, otherwise no restriction on the scheme.	○ Either/both the Securities and Exchange Law or/and the Investment Trust Law is/are applied, depending on the fund's legal structure. ○ Restrictions are imposed on bringing in an investment trust for which a public offering is possible. － Subject to regulations under the rules of the Japan Securities Dealers Association (Fair Business Practice Regulations No.4)
	Investors purchasing funds outside the country	○ To protect U.S. investors outside the United States, the U.S. laws and regulations concerning securities trading are applied.	○ The U.K. laws and regulations concerning securities are not applicable outside the United Kingdom － Investment in an offshore fund directly by a U.K. investor is not subject to regulation by the Financial Services and Markets Act.	○ Japanese restrictions concerning securities are not applicable outside Japan. － Unless "solicitation" is conducted in Japan, Japanese securities and exchange or other laws are not applicable.

	United States	United Kingdom	Japan
Information Disclosure Requirement	○ No legal or regulatory restriction for unregistered companies. — As a matter of practice, a prospectus ("Private Placement Memorandum") is customarily distributed to investors. — Basic terms and conditions are provided in the contract with investors. ○ Registered companies are required to disclose financial statements and other materials semiannually within 60 days after the close of reporting period. [Section 30 (e) of the Investment Company Act] — Filing with SEC is also required.	○ No legal or regulatory restrictions for offshore funds. — As a matter of practice, a prospectus is customarily distributed to investors. — Basic terms and conditions are provided in the contract with investors.	○ If the fund is subject to restrictions under the Securities and Exchange Law or the Investment Trust Law, the obligation to disclose information under the laws is imposed. — Otherwise no legal or regulatory restrictions.
Funds of Hedge Funds (FoHFs)	○ Registered FoHFs are often established as closed-end investment companies. ○ Can be sold to retail investors. — To introduce a performance-based compensation scheme for investment managers, the minimum investment amount is rather large at the moment. ○ No investment or other restrictions are imposed on the funds invested.	○ Established as closed-end investment companies. ○ Can be sold to retail investors. — Some FoHFs even satisfy the listing requirements because investments are well diversified. ○ No investment or other restrictions are imposed on the funds invested.	○ Structured as a securities investment trust. — In terms of investment choice, the total investment in securities must account for more than 50% of the assets of the FoHFs. ○ Can be sold to retail investors.

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