

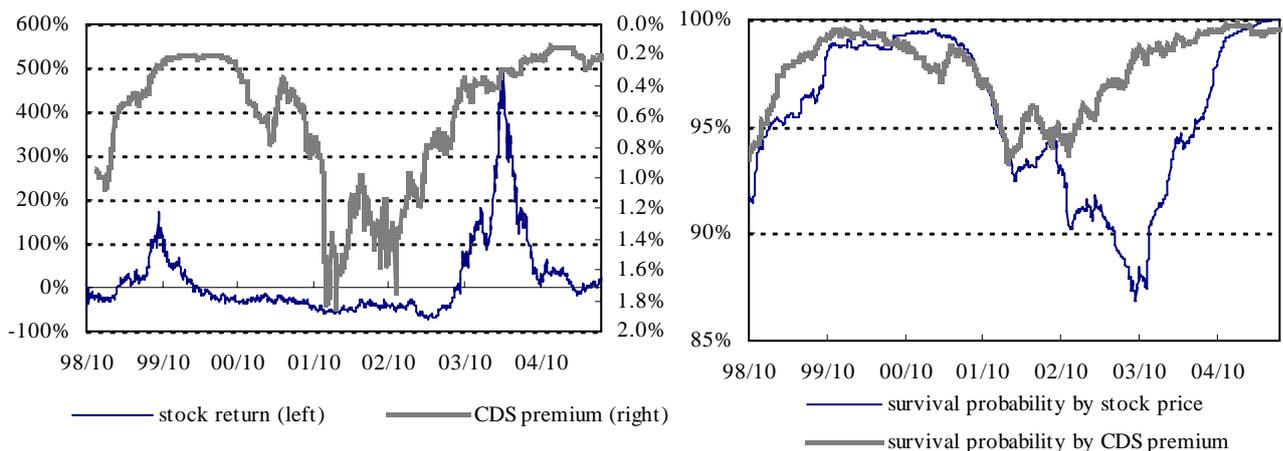
Box 1 Analysis of bank stock prices and CDS premium

During the second half of 2005, the stock prices of Japanese banks outperformed the TOPIX. From the late 1990s, bank stock prices remained undervalued but they seem to have recovered since broken out of the vicious cycle owing to the banks' efforts to tackle their non-performing loans and the pricing in of the improved outlook on profits. The following analysis compares the stock prices with the credit default swaps of major banks, and discusses the conditions behind the rise in bank stocks in the second half of 2005.

Framework of the analysis

As can be seen from Box Chart 1 (left), the change in bank stock prices and CDS premium seems to have no correlation at first glance. This lack of correlation can be explained by the fact that stock prices and CDS premium values banks from different perspectives and time horizon (Box Chart 2). Given this factor, the survival probability, which could be a common indicator incorporated in the price data of each product, is estimated and compared.

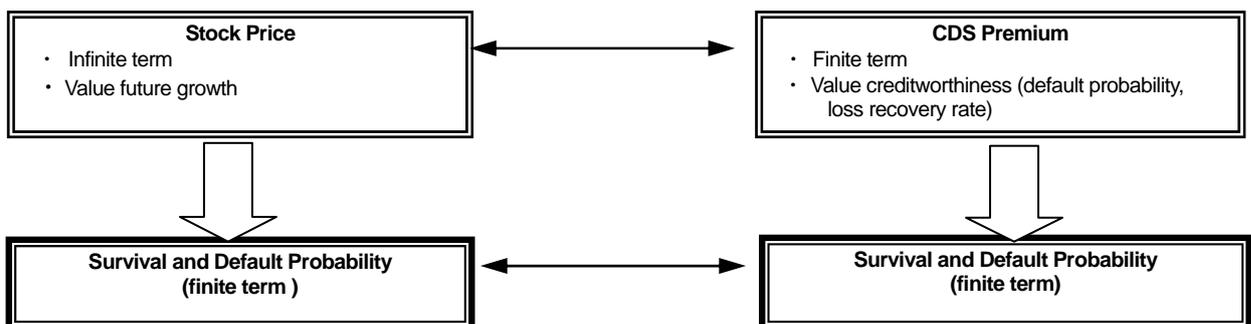
Box Chart 1: Stock price and CDS premium



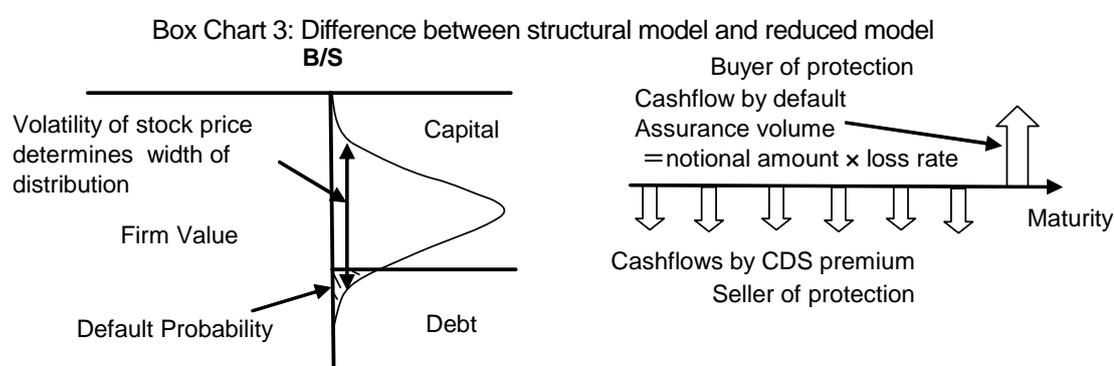
Note: Stock price are adjusted so that prices immediately after consolidation equal the immediately prior ones. Stock return is the one-year stock return of the average of four financial holdings companies (Mitsubishi Tokyo FG, Mizuho FG, Sumitomo Mitsui FG and UFJHG). CDS premium is the average of four banks (Bank of Tokyo-Mitsubishi, Sumitomo Mitsui Banking Co., Mizuho Corporate Bank, UFJ Bank). Survival probability rate is the rate for the firm to survive for one year. Survival probability rate estimated from stock prices is the average of those of four financial holdings companies (Mitsubishi Tokyo FG, Mizuho FG, Sumitomo Mitsui FG and UFJHG). Survival probability estimated from CDS premium is the average of four banks (Bank of Tokyo-Mitsubishi, Sumitomo Mitsui Banking Co., Mizuho Corporate Bank, UFJ Bank).

Sources: GFI, Bloomberg, AMSUS

Box Chart 2: Stock price and CDS premium



Upon estimating the survival probability, a structural model (Merton model) is used for the stock prices and an reduced model (Duffie-Singleton model) for the CDS premium. The Merton model estimates the probability (1 – default probability) of a particular firm surviving under the assumption that default takes place when corporate value becomes smaller than the book value of debt (i.e. a condition of excess debt) (Box Chart 3). Since corporate value can be measured as the sum of market capitalization and the amount of debt marked to market, the survival probability would increase as the stock price rises. Volatility of stock price is another important determinant of the future price path as a large stock price volatility implies a higher possibility of a large price fall, and hence the survival probability would decline. On the contrary, the Duffie-Singleton model assumes that corporate default is extemporal. Therefore, the default probability and loss rate of a particular firm are estimated as the present value of expected cash flow of CDS protection purchase (default probability multiplied by assurance volume) equals the present value of expected cash flow of CDS protection sale (acquired CDS premium until default). As a result, assuming the assurance volume and other conditions are constant, a wider CDS premium implies a lower survival probability or higher default probability.



Analysis results

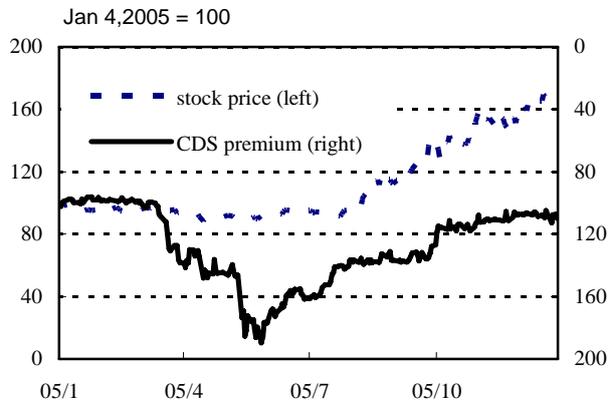
The results of the estimation are shown in Box Chart 1 (right). The results show that the survival probabilities estimated from stock price and CDS premium nearly matched in the fall of 2004, while the probabilities derived from stock price were significantly smaller than those derived from CDS premium during 2002–04. When those probabilities deviated greatly, the overall stock prices fell due to stagnated business sentiment and increased concern of deflation, and bank stocks could have been influenced by that overall market sentiment, and priced lower compared to the CDS premium.

Looking at the CDS premium and stock prices of banks in the second half of 2005, while the CDS premium fell 32 percent by the end of the year from the end of June, stock prices increased throughout the period, especially after August, and increased 73 percent by the end of the year from the end of June (Box Chart 4).

Shareholders under the Merton model could earn the residual of corporate value (market price of total assets) and book value of debt, so the payoff diagram is drawn as shown in Box Chart 5. Considering equity as a call option of corporate value, the option value is extremely sensitive to an increase in corporate value when corporate value exceeds debt (book value) and survival probability is nearly 100 percent. On the contrary, when the survival probability is nearly 100 percent, sensitivity to an increase in corporate value for debt holders is extremely limited compared to that of the shareholders.

Given the fact that, in the fall of 2004, survival probabilities implied in stock prices and the CDS premium converged at around 100 percent, the recent rise in equity prices could be explained by the improvement in profit outlook while the default risk lessened.

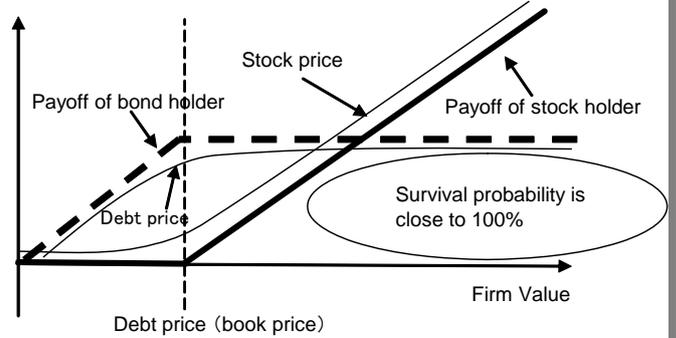
Box Chart 4: Stock price and CDS premium during CY2005



Note: Stock price is the average of Mitsubishi Tokyo FG, Mizuho FG and Sumitomo Mitsui FG. CDS premium is the average of Bank of Tokyo-Mitsubishi, Mizuho Corporate Bank and Sumitomo Mitsui Banking Co.

Sources: Bloomberg, AMSUS

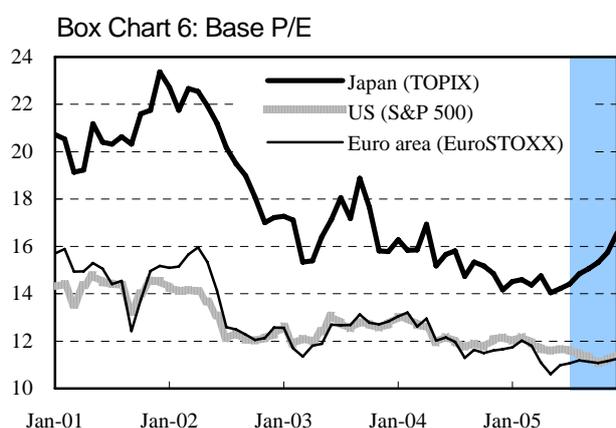
Box Chart 5: The relation among stock price, debt and firm value



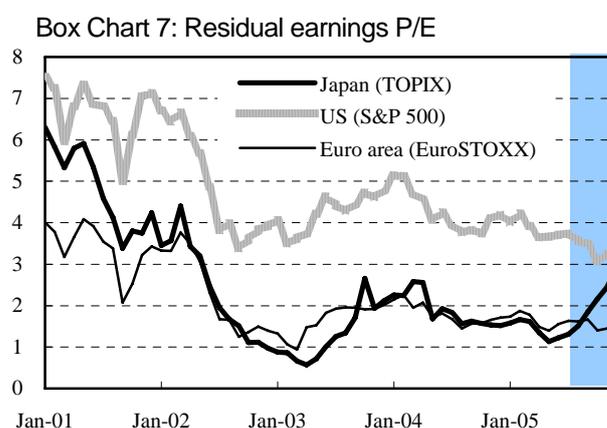
Box 2 Decomposition of P/E ratio by residual earnings model

The price earnings (P/E) ratio of Japanese equities started to rise in the second half of 2005 and its current level differs from that of the U.S. and Euro area (Chart 33). This Box discusses the background of this difference based on the concept of the residual earnings model which is one of the analytical models for calculating the fair price of stocks.

The residual earnings model defines equity value as the sum of the book value of current net assets and the present value of future residual earnings, which is the profit margin that exceeds the return required by investors (equity cost). Therefore, under this model, the P/E ratio consists of “base P/E,” which is the P/E ratio without residual earnings, and the P/E ratio related to residual earnings. Since the base P/E is the reciprocal of equity cost, which is the sum of the risk-free rate and equity risk premium, lower interest rates and lower risk premium would result in a higher base P/E. On the contrary, the P/E ratio related to residual earnings consists of the franchise factor, which is the ability to produce the current residual earnings, and its growth potential (growth factor) (see the note on the Box Charts).



Note: P/E ratio with the absence of residual earnings



Note: P/E ratio related to residual earnings (“franchise factor” multiplied by “growth factor”)

[Notes to charts in Box 2]

1. In the “Residual earnings” model, the P/E multiple is given by:

$$\frac{P_0}{E_1} = \frac{1}{k} + \frac{g}{k - g} \cdot \frac{(ROE_1 - k)}{k \cdot ROE_1}$$

P : stock price

E : earnings

k : equity cost (the sum of risk-free interest rate and equity risk premium)

g : long-term earnings growth

The above equation is a combination of the following three factors:

- $1/k$ (a reciprocal of equity cost, “Base P/E”)
- $g/(k - g)$ (“Growth factor”)
- $(ROE_1 - k)/(k \cdot ROE_1)$ (“Franchise factor”)

2. P/E ratios are based on 12-month forward EPS.

3. 10-year government bond yield is used as the risk-free interest rate.

4. Long-term real GDP growth predictions by Consensus Forecasts are used as long-term earnings growth.

For the Euro area, the figures of Germany are used before May 2003.

[Sources of charts in Box 2]

I/B/E/S, Consensus Forecasts, Bloomberg

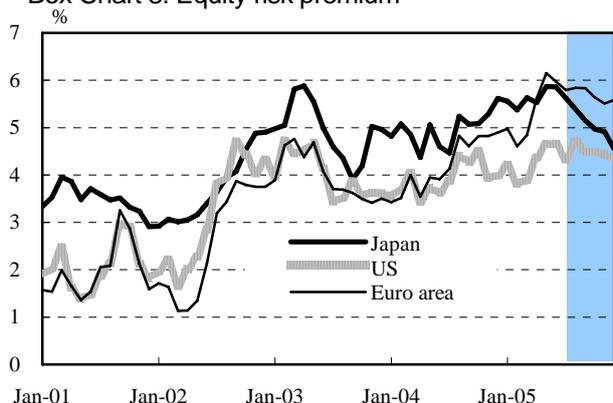
Box Charts 6 to 11 show the change in each component of the P/E ratio based on the above framework. The main characteristics are examined below.

(1) From 2003 to the first half of 2005, the Japan's base P/E was at a higher level than that of other regions while the P/E ratio of Japanese stocks was almost at the same level as that of the U.S. and higher than that of the Euro area. A higher base P/E is explained by the fact that even though the equity risk premium is high, the risk-free rate is low in Japan. A low risk-free rate results in a low equity cost. Meanwhile, the base P/E ratios of the U.S. and the Euro area are almost at the same level.

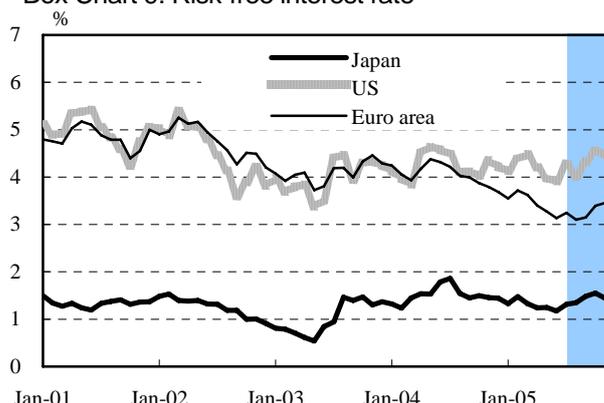
(2) On the contrary, taking account of the residual earnings P/E during the same period, Japan and the Euro area ones are almost at the same level while the level of U.S. is higher. Both the franchise factor and growth factor of the U.S. exceed those of Japan and the Euro area, reflecting the strong ability to produce profit and growth.

(3) Decomposing the P/E ratio, when the Japanese ratio deviated upwards from the U.S. and the Euro area, both the base P/E and residual earnings P/E rose. The rise in both factors is due to the decrease in risk premium. Looking at the residual earnings P/E, both the franchise factor and growth factor have risen, also reflecting the increase in the ability to produce profit and growth. Meanwhile, factors in the U.S. and the Euro area remained at the same level in the second half of 2005.

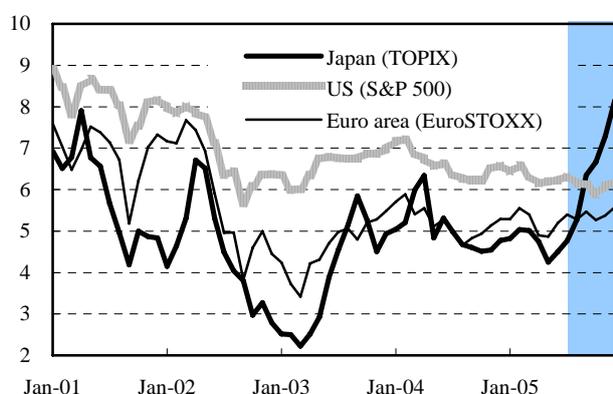
Box Chart 8: Equity risk premium



Box Chart 9: Risk-free interest rate

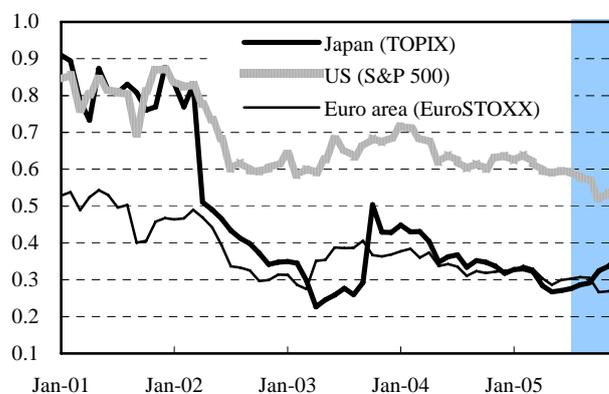


Box Chart 10: Franchise factor



Note: Ability to generate returns above equity cost.

Box Chart 11: Growth factor



Note: Present value of growth opportunities.

[Reference]

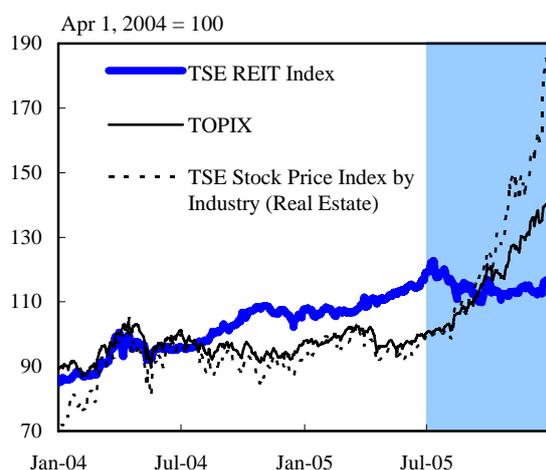
English, James R. [2001], "Applied Equity Analysis," McGraw-Hill, pp.349-359

Box 3 Current trends in the J-REIT market

While overall stock prices rose sharply, the Tokyo Stock Exchange's Japanese real estate investment trust (J-REIT) index fell during mid-July to early August, ending its upward trend since the market was established in 2001 (Box Chart 12). The price adjustment was due to profit taking against the background of a sharp price increase until early July and a shift of funds mainly to solid-performing equity markets. Other factors that contributed to the adjustment in price were changes in the supply and demand situation and changes in investors' behavior. Concern over the supply and demand situation of J-REIT increased since the initial market price of more than half of the ten issues that were listed after July, started below the offer price. Also, as the number of funds has increased to 28 and the pool of assets and the creditworthiness of sponsor companies have diversified, investors have started selecting funds somewhat. Net operating income rate, derived from dividing the rental income after deducting operating expenses before tax and depreciation by the acquired asset price, is one of the indicators used to evaluate the performance of real estate investment. During the second half of 2005, investors tended to avoid those investment projects that had a net operating income rate of less than 4 percent.

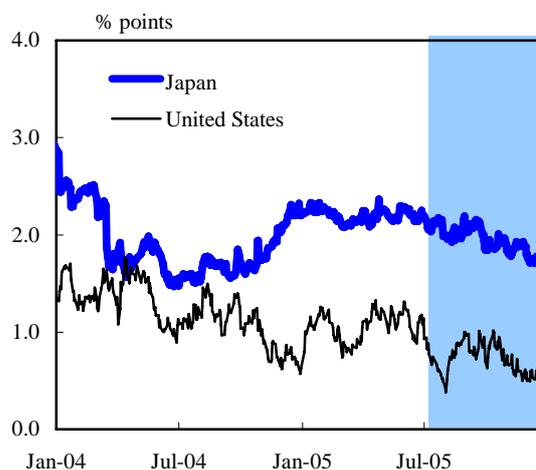
However, the market capitalization of J-REIT and investments into private real estate funds continued to increase, reflecting the continued willingness to invest in real estate, and the base of investors in J-REIT is expanding. Although domestic financial institutions who have been the major buyers of J-REIT seemed to be reducing their investment amount, foreign investors have become net buyers. Foreign investors showed persistent investment demand for J-REIT against the background of the wide yield spread (difference between dividend yield and risk-free rate, Box Chart 13) of J-REIT compared to that of foreign REITs.

Box Chart 12: J-REITs



Note: TSE REIT Index is a capitalization-weighted index based on all REITs listed on the Tokyo Stock Exchange.
Sources: Bloomberg, QUICK

Box Chart 13: REIT yield spreads (Japan, US)



Source: Bloomberg

[Reference]

Sasaki, K., Ichise, Y., and Shimizu, T. [2005], "Expansion of the J-REIT market and its price formation", Bank of Japan Review Series (Japanese), No.05-J-12

Box 4 Relationship between government bond yields and credit spreads

Credit spreads in Japan have been tightening since spring 2002, and the trend continued in the second half of 2005. The trend continued against the background of improved credit conditions, reflecting the improvement in corporate balance sheets and profits. Another contributing factor was that investors who were eager to increase the return on their portfolio increased purchases of corporate bonds as a substitute for government bonds, whose interest rates stayed at low levels.

Following is a regression analysis of credit spreads by rating grades, using the stock price percentage increase and implied volatility of equity as explanatory variables for credit conditions, and using government bond yields and implied volatility of government bonds, which reflects the uncertainty of price movements of government bond yields, as explanatory variables for investors' behavior. The results show that each factor had different effects on credit spreads based on the size of credit risk.

Firstly, government bond yields had a statistically significant effect mainly on high grade credit spreads (Box Charts 14 and 15). This result implies that currently, high grade bonds tend to be invested in as quasi-government bonds and also that if investors could gain high enough returns on government bonds as the yields rise, there is a possibility that investors who put priority on the absolute return on investment would shift their investment from high grade bonds to government bonds.

On the contrary, bonds that have medium credit risk, such as bonds with single A or triple B ratings, were affected significantly by the implied volatility of government bonds. The results imply that bonds with these ratings are more likely to be influenced by the uncertainty of the yields and the associated lowering of investment sentiment and reduced liquidity. However, based on a similar condition in the past, these effects are considered to be short-lived.

Bonds with low ratings such as double B were mainly influenced by an increase in equity prices and implied volatility of equity but not yields. The results can be interpreted to reflect the fact that changes in default probabilities are affected by corporate information directly related to credit risk such as earnings expectations and uncertainty as the rating becomes lower.

Box Chart 14: Relationship between corporate bond spread and JGB yield

	JGB yield	Yield IV	Stock price	Stock IV	Adj R ²
Aa	0.252 (0.015)	0.021 (0.004)	-0.002 (0.000)	0.005 (0.001)	0.649
A	0.291 (0.040)	0.064 (0.009)	-0.004 (0.001)	0.010 (0.002)	0.519
Baa	0.116 (0.049)	0.080 (0.011)	-0.004 (0.001)	0.015 (0.003)	0.401
Ba	-0.007 (0.094)	0.037 (0.019)	-0.013 (0.001)	0.034 (0.008)	0.352

Notes: 1. JGB yield is on bonds with 5-year maturity. Yield IV is the implied volatility of JGB future options. Stock price is the one-year percentage increase of the Nikkei 225 index. Stock IV is the implied volatility of Nikkei 225 index options. The ratings are those of Moody's.

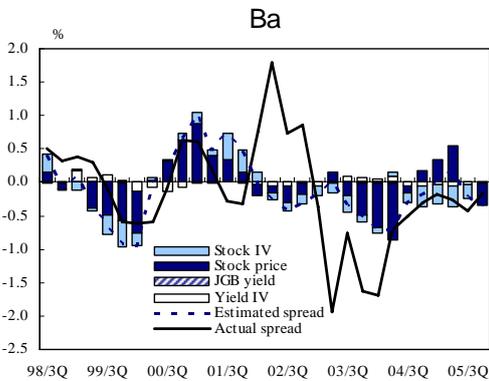
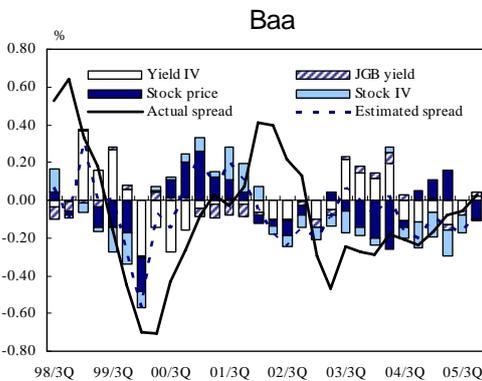
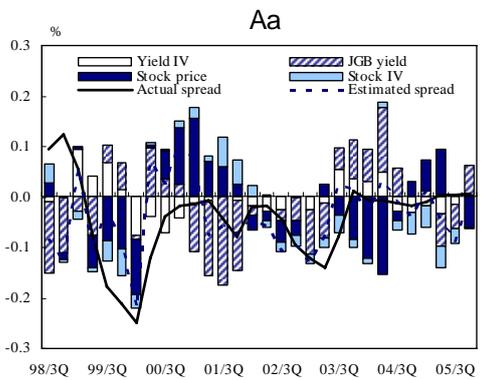
2. The standard errors are in parentheses, and obtained using Newey-West estimator. The shaded area indicates coefficients which are significantly different from zero at 5%.

3. The sample period is from July 1, 1997 to Dec. 30, 2005.

Sources: Japan Securities Dealers Association, Bloomberg

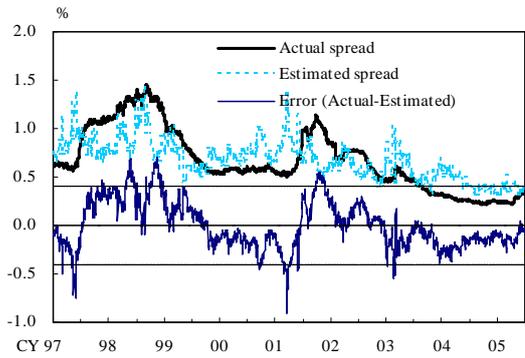
Comparing the triple B credit spread and the estimated spread, the difference was wide during the period of financial crisis in 1997–98 and the period of defaults of Enron and Worldcom in 2001–02, reflecting the fact that credit spreads widen more than the level that could be explained by changes in stock prices or JGB yields upon a sudden credit event (Box Charts 15 and 16). Also, for the past one to two years, historical spreads have been tighter than the estimated spreads which suggests that investors’ behavior of searching for yield has supported a tighter spread. However, recently, although the estimated spreads appear to be declining against the background of higher stock prices, credit spreads have started to widen somewhat, and the levels of the spread and the estimation value are almost the same (Box Chart 1).

Box Chart 15: Contribution decomposition of year-on-year change in credit spread



Note: 1. Calculated from the results of Chart 14
 2. Average of daily results
 Source: Japan Securities Dealers Association, Bloomberg

Box Chart 16: Actual and estimated spreads of Baa rated bonds



Notes: 1. Calculated from the results of Chart 14.
 2. The dotted lines are the 90% confidence interval.
 Sources: Japan Securities Dealers Association, Bloomberg

Box 5 Current trends in Japanese mutual funds

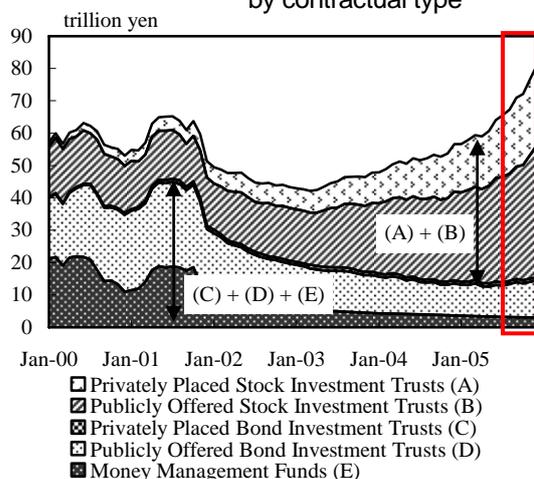
Investment inflows into Japanese mutual funds* have continued and the amount of net assets of publicly and privately placed contractual type investment trusts stood at 81 trillion yen at the end of 2005, continuing to post historical highs. From Box Chart 17, the increase in net assets since the second half of 2000 was due to investments in MMF by corporations while interest rates declined. In addition, investments in MMF and bond mutual funds by retail investors increased due to a change in distribution method of bond funds, from distributions based on expected returns to those based on actual returns. Later, from the end of 2001 to the beginning of 2002, the MMF price fell below par due to corporate accounting scandals in the U.S., and resulted in an increase in terminations and decrease in net assets. Since the second half of 2003, net assets increased with asset inflows into various products, especially into stock mutual funds.

* Japanese mutual funds are mainly investment trusts of contractual type.

Among mutual funds, amount of net assets have increased notably in mutual funds which frequently distribute capital gains and dividends, funds investing in high yield sovereign debt and funds that diversify their investment assets. The most prominent fund, investing mainly in foreign government bonds and distributing profits monthly, increased its assets by 0.7 trillion yen in the second half of 2005 to 5 trillion yen. Also, newly launched funds have been characterized by greater product variety. For example, funds investing in emerging market equity, commodity related products, and stocks of region-specific companies have recently been launched. Meanwhile, increase in the amount of net assets of privately placed stock mutual funds has been mostly contributed by the increase in net assets of funds that are customized for institutional investors such as banks and life insurance companies.

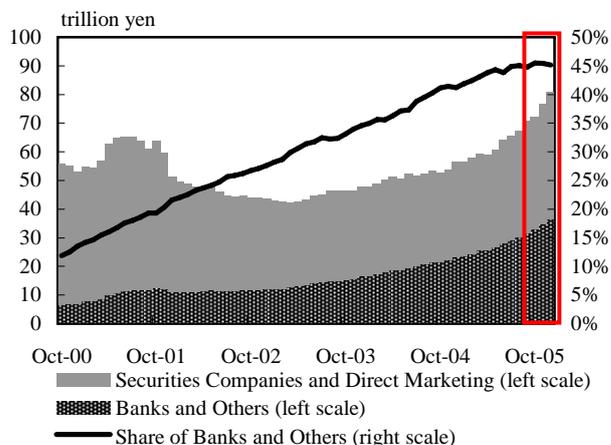
According to Box Chart 18, the percentage share of sales agent services offered by banks have been increasing since the deregulation that allowed banks to sell mutual funds in 1998, contributing to the expansion of the mutual fund market. Banks have been strengthening their sales forces because of the associated sales commission. Moreover, since October 2005, Japan Post has started selling mutual funds. The size of the global mutual fund market has been increasing by one trillion dollar annually. Japan was ranked fourth by market size in 1999 but fell to ninth place in 2004. Also, from the Flow of Funds account as of September 2005, the percentage share of mutual fund beneficiary certificates among household assets remained at around three percent.

Box Chart 17: Total net assets of investment trusts by contractual type



Source: The Investment Trusts Association, Japan

Box Chart 18: Share by distribution channel



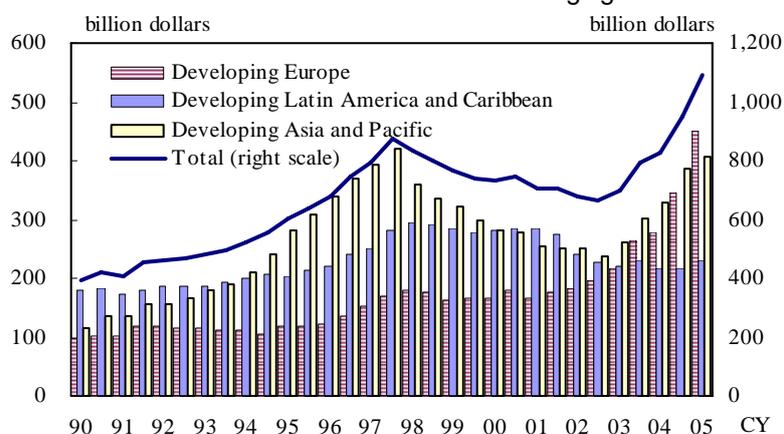
Source: The Investment Trusts Association, Japan

Box 6 Current trends in funds flow related to Asia

Fund inflows to emerging countries have increased rapidly since 2003 based on BIS Consolidated International Banking Statistics*. By country/region where the immediate borrower is located, the increase in fund inflows to Eastern Europe is significant and fund inflows to Asian countries, which had been declining since the Asian currency crisis in 1997, are also reaching closer to pre-crisis levels (Box Chart 19).

* The BIS Consolidated International Banking Statistics are based on data collected from major banks (including 57 Japanese banks) from 30 countries and regions. The statistics are compiled of cross-border claims of banks including claims of branches, and subsidiaries by country, and local claims of foreign branches and subsidiaries. Claims that are denominated in non-local currencies with local residents are categorized as cross-border claims. The data of financial institutions other than banks are not included in the statistics.

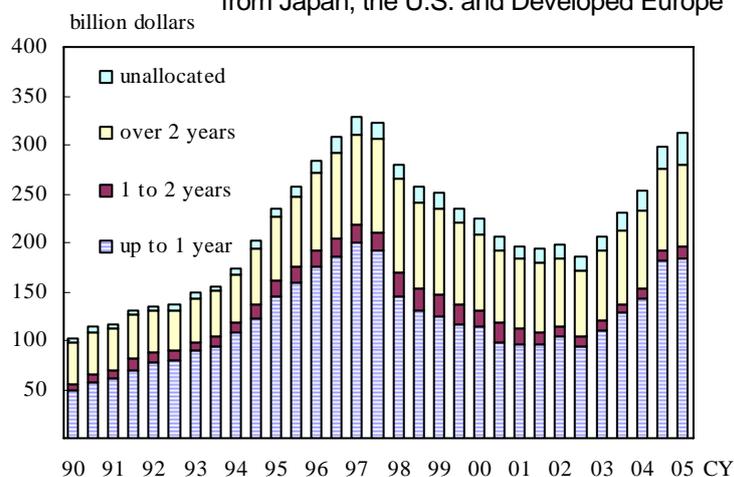
BOX Chart 19: Cross-border claims on emerging markets



Source: BIS

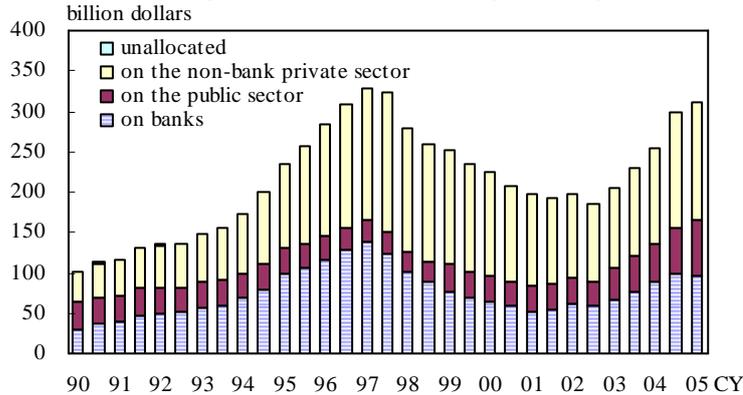
Looking into the details of cross-border claims to Asian countries by Japan, the U.S. and Developed Europe, the recent increase in loan amounts was mainly due to short-term loans with a maturities of less than one year, and loans to financial institutions by sector (Box Charts 20 and 21). Prior to the Asian currency crisis, these short-term loans accounted for about half of the total claims, and a rapid withdrawal of these funds triggered the currency crisis. After the currency crisis, the amount of these short-term loans had been declining, but has started to increase again recently.

BOX Chart 20: Cross-border claims on Developing Asia and Pacific by maturity, from Japan, the U.S. and Developed Europe



Source: BIS

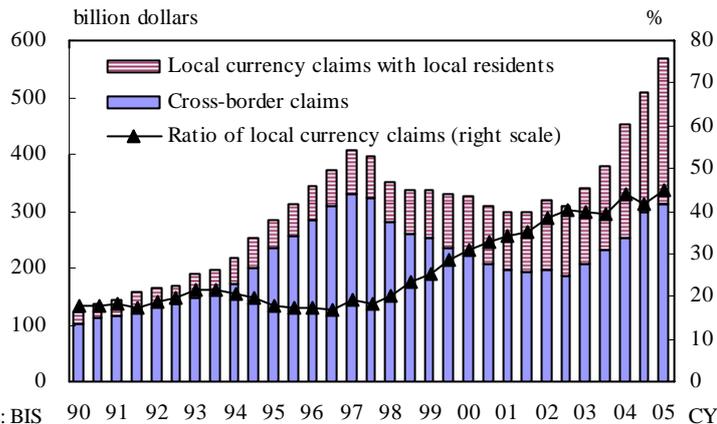
BOX Chart 21: Cross-border claims on Developing Asia and Pacific by sector, from Japan, the U.S. and Developed Europe



Source: BIS

Compared with the pre-currency crisis period, one difference to be noted is that not only cross-border claims but also the amount of local currency claims were increasing (Box Chart 22). This difference was due to the acquisition of local banks by banks of Developed Europe in order to expand their office network and customer base in Asian countries, resulting in expanded loan activities in the region. These local investments and localization activities of developed countries' financial institutions might diminish the risk of a rapid withdrawal of funds, which was seen during the last currency crisis.

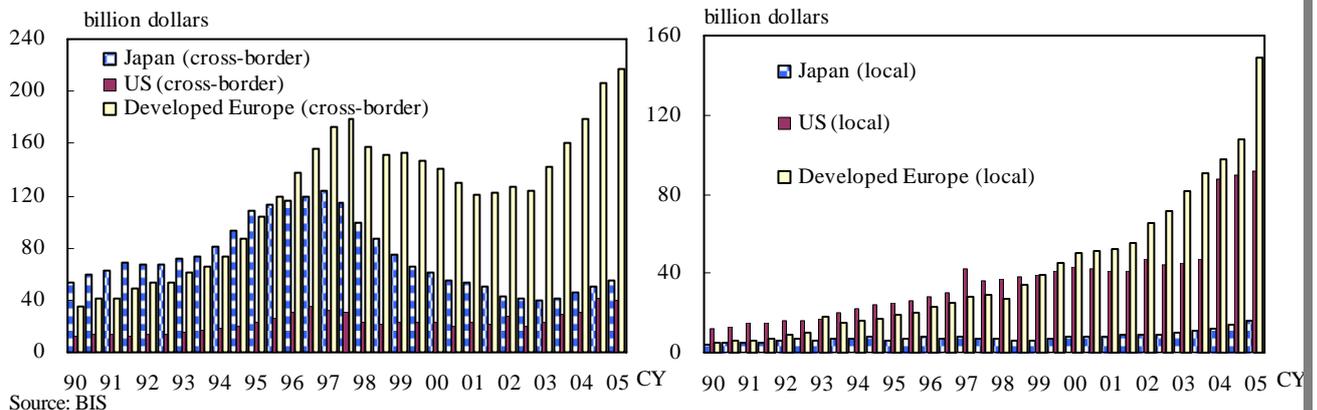
BOX Chart 22: Consolidated cross-border claims/Local currency claims on Developing Asia and Pacific, from Japan, the U.S. and Developed Europe



Source: BIS

Looking at the details of cross-border and local claims to Asian countries by original countries of financial institutions, the recent increase in claims were mainly attributable to banks of Developed Europe, while the increase in claims of Japanese banks were relatively moderate to cross-border claims (Box Chart 23).

BOX Chart 23: Cross-border claims/Local currency claims on Developing Asia and Pacific from Japan, the U.S. and Developed Europe



Source: BIS

Box 7 Current trends in hedge fund activity

Global hedge funds developments

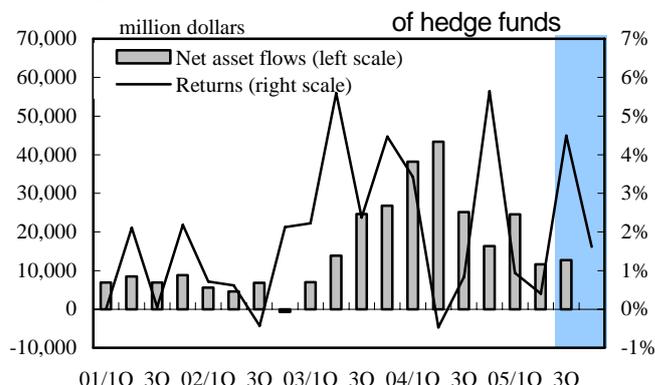
In recent years, the amount of asset inflows into hedge funds has increased globally (Box Chart 24), and hedge funds' impact on the global financial market has become stronger. Although the exact amount invested in hedge funds is unknown, some estimates put the figure at over 1 trillion dollars globally. Hence, the importance of capturing the investment behavior of hedge funds and asset flows into hedge funds has risen more than ever.

The following factors seem to have contributed to the increased prevalence of hedge funds: (a) hedge funds achieved higher returns with a relatively low volatility compared to traditional assets such as stocks and bonds, and (b) expectation of diversification effect by inclusion in portfolios since hedge funds had a low correlation to traditional assets.

Although asset inflows to hedge funds have continued in the recent period (Box Chart 24), the return has been declining compared to the past (Box Chart 25). The decline in return was due to the fact that there had been more funds in the market that had lowered their risk compared to the past and sought a stable return while investors' expected risk on hedge funds decreased after the LTCM crisis in 1998 and low performance of traditional assets since 2000. Also, the increased inflow of assets to the hedge fund market has diminished the opportunities for profit. The greater number of funds could have reduced the average quality of fund managers.

While the amount invested in hedge funds has increased globally and the average risk and return have been declining, asset flows related to individual funds have shifted rapidly based on performance. For example, the convertible arbitrage strategy, which is one of the most popular strategies of hedge funds (Box Chart 26), has shown deteriorating performance and funds have flowed out due to the decline in equity volatility and decrease in new issuance

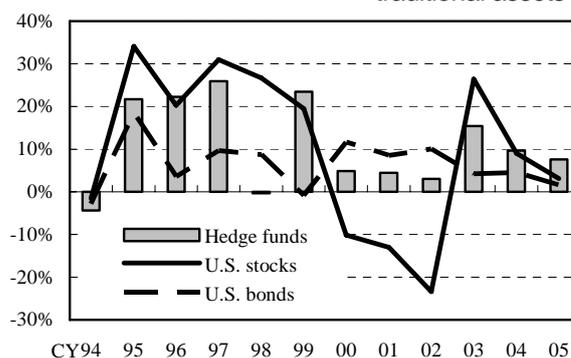
Box Chart 24: Net asset flows and returns



Note: These figures are on a quarterly basis. The latest figures are as of end-September, 2005 (asset flows) and end-December, 2005 (returns).

Sources: CSFB/Tremont, Tremont Capital Management

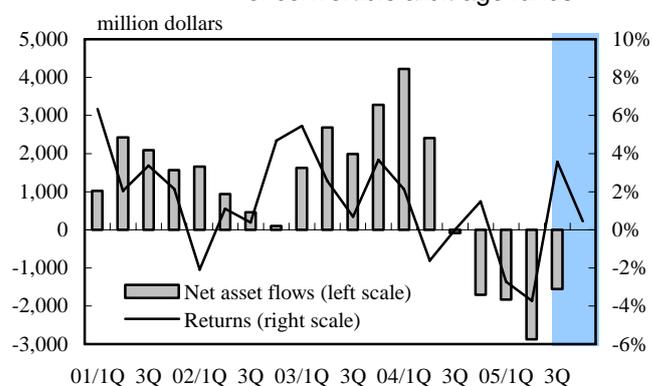
Box Chart 25: Returns of hedge funds and traditional assets



Note: These figures are annualized returns.

Sources: CSFB/Tremont, Bloomberg

Box Chart 26: Net asset flows and returns of convertible arbitrage funds



Note: Figures are on a quarterly basis. The latest figures are as of end-September, 2005 (asset flows) and end-December, 2005 (returns).

Sources: CSFB/Tremont, Tremont Capital Management

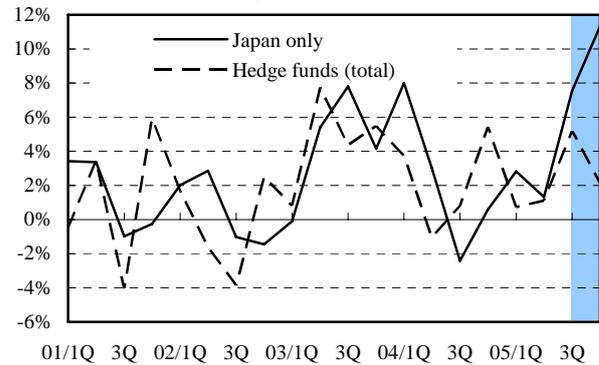
of CBs since 2004. Moreover, downgrades of GM and Ford triggered some funds to book large losses and resulted in fund outflows from this strategy.

Trends in hedge fund investment in Japan

In recent years, the investment behavior of hedge funds has increased their influence on interest rates, equity and foreign exchange markets. Hedge funds that invested mainly in Japanese financial assets seem to be increasing. Comparing the performance of hedge funds that invest only in Japanese financial assets with those of other funds, the performance was superior (Box Chart 27), and most of the funds that invested in Japanese financial assets seems to be investing in stocks (Box Chart 28).

Meanwhile, investments in hedge funds by Japanese institutional investors were increasing (Box Chart 29). Until recently, Japanese institutional investors have invested largely in funds of hedge funds, but some of them were considering investing in single funds to lower management fees, reexamining excess diversification investment, and increased mobility in changing strategy (mainly in multi strategy funds). Strategies for investing in hedge funds were also diversifying.

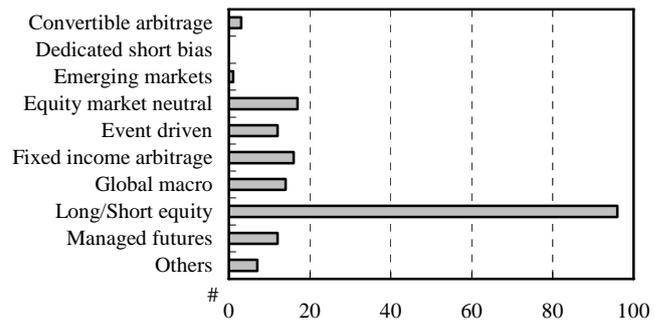
Box Chart 27: Returns of hedge funds investing only in Japanese financial assets



Note: Figures are on a quarterly basis. The latest figures are as of end-December, 2005.

Sources: EurekaHedge, Hedge Fund Research

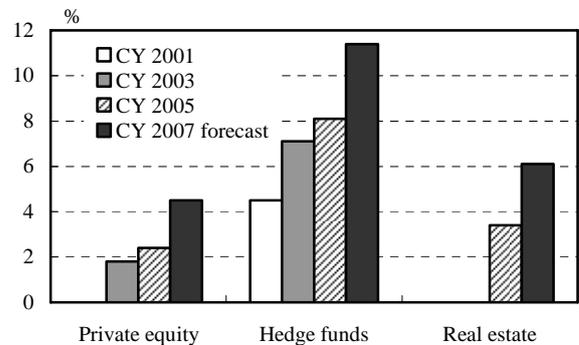
Box Chart 28: Number of hedge funds investing in Japanese financial assets



Note: These figures are based on 179 hedge funds registered on the Lipper TASS Database.

Source: Lipper TASS Database

Box Chart 29: Current and forecast mean strategic allocations to alternative investments



Note: The coverage of the survey is public sector and corporate pension funds / endowments / foundations generally with assets of \$1 billion or more.

Source: The 2005-2006 Russell Survey on Alternative Investing