

VIAMINVEST

Incentive Risk from the Performance Fee and Remedies

White paper

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Latest revision 13 May 2010 first version 2008

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Preface: This white paper uses a series of simple spreadsheet based simulations in order to quantify how returns and risks are distributed to respectively the investors and the performance fee receivers for different types of performance fees and fund setups. These simulations leave no doubt that the use of asymmetric performance fees introduces enormous risks to the investors unless certain remedies are implemented. Ideally a combination of six remedies can be used to enable the best possible incentive effects and the highest degree of investor protection. This paper also shows that fewer than six remedies can be used in combination to reach acceptable solutions from the point of view of the investors. However, as a minimum one should use three specific remedies in combination and they are: 1) Abstaining from leverage, 2) using a hurdle rate that is alpha neutral and 3) that furthermore has strong and positive correlation with the returns of the investment fund in mind.

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Introduction

The use of performance fees in investment funds is normally associated with both a desirable and an undesirable incentive effect. The desirable effect is that it gives the portfolio manager an incentive to maximize the portfolio return because the manager will get a share of this increase as well. Naturally, this incentive only works if the manager appreciates more income and indeed knows how to increase the portfolio return. The undesirable effect is that the use of performance fees also gives the manager an incentive to take excessive risks. To see this one should note that most performance fees are asymmetric in the sense that they earn bonuses for outperforming a given hurdle rate but they do not pay any money back to the investors if the return is below this hurdle rate. As a result of this asymmetry the portfolio manager can increase his average bonuses from the performance fee simply by increasing the return volatility of the managed portfolio. This is easily done in a leveraged fund by increasing the leverage of the portfolio. However, it is also possible in a long-only fund by picking assets with returns that have low or outright negative correlations with the hurdle rate that is used for the calculation of the performance fee.

The big problem from the investors' point of view is that excessive risk taking is hurting them both because it makes their investment more risky but also because it lowers their share of the long-term return because of the often dramatically increased performance fee payments. To make matters even worse any portfolio manager can easily increase the return volatility but only the most competent portfolio managers are able to raise the mean return for any given level of risk.

Asymmetric performance fees do not align the incentives between investors and managers with regard to the losses as it is possible with personal investment in a fund. However, as an incentive mechanism the asymmetric performance fee still has one clear advantage over personal investment and that is that it does not require the portfolio managers to be wealthy. Personal investment is only credible and effective if the portfolio managers have substantial money to invest in the fund and this is often a problem for new investment funds that typically is managed by younger and non-wealthy portfolio managers.

The following text is divided into six subsections each exploring how six specific remedies can be used to shape the incentives of an asymmetric performance fee so that it suppresses its undesirable risk-maximizing incentive while not diminishing its desirable return-maximizing incentive. The six subsections are: remedy 1 - abstaining from leverage of investments, remedy 2 - using a long calculation period for the performance fee, remedy 3 - using a hurdle rate that is alpha neutral, remedy 4 - using a hurdle rate that has strong and positive correlation with fund returns, remedy 5 - using a high water mark provision and remedy 6 - using a multi-series fund for fee calculation. Concluding remarks follow.

Remedy 1 - Abstaining from leverage of investments

Table 1 below presents a very simple numerical example showing how increased leverage can be used as an instrument to increase portfolio volatility in order to increase the performance fee at the expense of the return to the fund investors.

Table 1 - The effects of leveraged investments

	Table 1, case 1* Non-leveraged fund 1 year performance fee	Table 1, case 2* 75% leveraged fund 1 year performance fee
Average annual fund return	10.00%	25.75%
Standard deviation fund return	16.46%	65.86%
Annualized long-term return to fund**	8.83%	8.25%
Average annual return to investors	7.40%	16.78%
Average annual return to performance fees	2.60%	8.98%
Annualized long-term return to investors	6.56%	3.00%
Annualized long-term return to performance fees	2.57%	8.60%
Investors' share of annual return	74.00%	65.15%
Performance fee's share of annual return	26.00%	34.85%
Investors' share of annualized long-term return	71.88%	25.84%
Performance fee's share of annualized long-term return	28.12%	74.16%

Notes: The numerical cases given in this table are calculated by use of the following simplifying assumptions. 1) The fund is able to earn 26% in even years and -6% in uneven years. 2) The performance fee is 20% of the return in excess of the hurdle rate and it is 0% otherwise. 3) The hurdle rate is fixed at 0%. 4) The performance fee is calculated once every year. 5) The fund is able to borrow at 4.75% for leverage up to 75% of debt in total gross investment.

* Table and case signature refer to the Appendix tables at the end of this white paper that contain the details of all the calculations.

** All annualized long-term returns are calculated using $EndOfIndexValue^{\frac{1}{n}} - 1$, where n is the number of years the index is growing from a value of 1.

As shown in Table 1 a **non-leveraged fund** would earn an average annual return of 10% with a standard deviation of 16.46%. The 10% return is distributed so that the average annual performance fee would get 2.6% of the return and the average annual return to investors would be 7.4%. Much more interesting and relevant the long-term return to investors calculated as the annualized investor return is 6.56%. For comparison the similarly calculated long-term return generated by the performance fee is 2.57%.

Now assume that the fund is leveraged and borrows 75% of its total gross investments paying 4.75% in interest. In this case **the 75% leveraged fund** would earn an average annual return of 25.75% with a standard deviation of 65.86%. The average annual return from the performance fee would be 8.98% and the average annual return to investors would be 16.78%. Much more relevant the long-term return to investors calculated as the annualized investor return is now 3.00%! For comparison the similarly calculated long-term return generated by the performance fee is now 8.60%! To conclude, the investors end up making far less money in the long-term in the leveraged fund (3.00% annualized) than they did in the non-leveraged fund (6.56% annualized) and their risks are much higher. The big winner is the portfolio manager that instead of earning a long-term return of 2.57% in the non-leveraged fund ends up earning 8.60% in the 75% leveraged fund!

These results are not the outcome of an absurd and unlikely case. The non-leveraged 10% annual fund return and its 16.46% standard deviation are rather representative of long-term stock market returns and

so are the 4.75% borrowing rate and the 75% leverage. ViamInvest's spreadsheet based simulation model makes it easy to test all sorts of other scenarios with different assumptions and the overall conclusion is that leverage when combined with a short-term 12 months performance fee increases the risks enormously without reasonably gains in the long-term returns. Indeed, in the case shown in Table 1 the long-term fund return actually drops from 8.83% to 8.25% as a result of leverage.¹ Moreover, such leverage redistributes fund returns absurdly in favor of the portfolio manager at the expense of the investors. Proper hedging against losses can mitigate the problems caused by leverage but they can't solve them also because no hedge is perfect and the success of hedging to curb downside risks depends critically on a manager that may have little incentive to make sure the fund is well hedged. Consequently, abstaining from using leverage can be viewed as a rather simple and powerful method for promoting proper incentives regarding the performance fee.

The bust rate of a leveraged fund

It is easy to see how dangerous leverage is from the investors' point of view by calculating the return needed to bust/ruin a fund completely. For instance, many real world hedge funds are leveraged by 75% and borrow at about 5%. **The bust rate of such funds is less than 22%!** If they have \$100 million from investors they borrow \$300 million at 5% to invest a total of \$400 million. Losing 22% on \$400 million is the same as losing \$88 million plus paying $5\% \times \$300 = \15 million on interest. So in total the fund loses $\$88 + \$15 = \$103$ million and the fund closes and the investors have lost everything.

The closing rate of a leveraged fund

Now make the reasonable assumption that hedge-funds are closed whenever they lose 40% of their original value within a year. **The closing rate of this kind of funds is less than -7%!** If they have \$100 million from investors they borrow \$300 million at 5% to invest a total of \$400 million. Losing 7% on \$400 million is the same as losing \$28 million plus paying $5\% \times \$300 = \15 million on interest. So in total the fund loses $\$28 + \$15 = \$43$ million or 43% and the fund is closed.

With these rather low closing rates and bust rates in mind it is not really that surprising that more than a thousand leveraged hedge funds are closed or busted every year globally. The surprising element is that new highly leveraged funds keep being born and are able to attract new investors. ViamInvest attribute this behavior to a combination of continued investor ignorance in part of the investor universe and scruple-less but skilled marketing from hedge funds that have very large incentives to be in business with highly leveraged funds. ViamInvest does not claim that fund leverage is bad in all situations. We only claim that too often it is used only as an instrument to enrich portfolio managers at the expense of the investors.

¹ It is a myth, that, leverage always increases return as long as you can borrow for less than you make doing your primary investments. The case in mind shows that the long-term return actually falls even if the fund's primary return at 10% is more than twice as high as its borrowing rate at 4.75%. The root of the problem is the unavoidable return asymmetry meaning that a relative loss always needs an even bigger subsequent relative gain in order to be neutralized. E.g. a 50% loss is neutralized by a 100% gain. What is not a myth is that more leverage always increases risk and this is still so when leverage is combined with the best hedges because no hedge is 100% effective. Another certain outcome of increased leverage is that the return to the performance fee increases.

Remedy 2 - Using a long calculation period for the performance fee

The objective is to secure that the performance fee induces the portfolio manager to focus on maximizing the investors' return and not on maximizing their risk. A second kind of remedy to promote that objective is to increase the calculation period of the performance fee. More specifically, a long-term 3 years performance fee could further ensure that the performance fee is paid predominantly for prudent investment management and not for any other and irrelevant reason. An example of an irrelevant reason that could trigger huge and inappropriate payouts from a short-term performance fee but not from a long-term performance fee is the presence of strong and negative short-term autocorrelation in the fund return vis a vis the hurdle rate.² This is exactly the situation given by the four cases in Table 2 below. These cases are relevant to study because this form of autocorrelation can happen naturally from time to time in the return streams of the fund or in the hurdle rate. However, it may also be the result of deliberate manipulation efforts regarding the fund returns by an opportunistic portfolio manager.

Table 2 - The effects of changing the evaluation period of the performance fee from 1 year to 3 years

	<u>Table I, case 1</u> Non-lev. fund 1 yr perf. fee	<u>Table I, case 2</u> 75% lev. Fund 1 yr perf. fee	<u>Table II, case 3</u> Non-lev. fund 3 yrs perf. fee	<u>Table II, case 4</u> 75% lev. Fund 3 yr perf. fee
Average annual fund return	10.00%	25.75%	10.00%	25.75%
Standard deviation fund return	16.46%	65.86%	16.46%	65.86%
Annualized long-term return to fund	8.83%	8.25%	8.83%	8.25%
Average annual return to investors	7.40%	16.78%	8.08%	11.70%
Average annual return to performance fees	2.60%	8.98%	2.02%	4.08%
Annualized long-term return to investors	6.56%	3.00%	7.23%	6.16%
Annualized long-term return to perf. fees	2.57%	8.60%	1.96%	3.72%
Investors' share of annual return	74.00%	65.15%	80.00%	74.16%
Performance fee's share of annual return	26.00%	34.85%	20.00%	25.84%
Investors' share of annualized long-term return	71.88%	25.84%	78.69%	62.39%
Perf. fee's share of annualized long-term return	28.12%	74.16%	21.31%	37.61%

Notes: The numerical cases given in this table are calculated by use of the same assumptions as given in Table 1 apart from that now the performance fee can be calculated on 3 years of cumulated returns as well as on 1 year returns. For exact calculations see Table I and Table II in the Appendix.

Table 2 extends the case description given in the Table 1 but now the point is also to show how effective a long-term performance fee is at reducing the incentive to take excessive risk and in securing the investors a fair share of the investment fund's long-term return. The cases in Table 1 assumed the performance fee was calculated on a 12 months period. Now we change that assumption to a 36 months period but otherwise all the case assumptions are unchanged. **In this 3 years case the non-leveraged fund** will earn a long-term annualized return to its investors of 7.23% and the comparable long-term return to the portfolio manager is 1.96%. For comparison, recall that in the case with 1 year performance fees this long-term return was only 6.56% for investors and 2.57% for the portfolio manager. In other words, the introduction of 3 years performance fees improves the investor's share of the non-leveraged investment fund's total

² To be sure, negative autocorrelation in stock returns implies that when a stock return is high (low) in one year it is also more likely to be low (high) the following year. Conversely, positive autocorrelation implies that when a return is high (low) in one year it is also more likely to be high (low) in the following year.

long-term returns from 71.88% to 78.69% which is very close to the theoretical maximum of 80% when the performance fee is 20%.

Now consider the 75% leveraged portfolio. In this case the fund using 3 years performance fees will earn a long-term return to its investors of 6.16% and the comparable long-term return to the portfolio manager is 3.72%. For comparison, recall that in the case with 1 year performance fees this return was only 3.00% for investors and 8.60% for the portfolio manager. In other words, the introduction of a 3 years performance fee in a leveraged fund dramatically improves the investor's share of the investment fund's total long-term returns from 25.84% to 62.39%! It should also be noted that the incentive to increase the portfolio risk has been dramatically reduced by the introduction of the long-term performance fee. This is quite obvious from the fact that the portfolio manager only increases the long-term performance fee from 1.96% to 3.72% by using leverage in such a fund whereas he increases it from 2.57% to 8.60% in a fund that uses a short-term 1 year performance fee.

The four cases given in Table 2 indicate that the fund investors are far better off both in terms of risks and returns with fund setups that require long-term performance fees (minimum 3 years) and that prohibit the leverage of investments. An objection to this conclusion could be that most hedge funds are hedging against negative risks and therefore are less exposed to the increased risk of leverage than suggested by these examples. This is true but would you trust a portfolio manager to do this hedging properly when it is highly costly and time consuming from the manager's point of view and when his personal gains from doing so are limited? Indeed, extensive hedging would lower the net return because it is costly and it would therefore also lower the manager's performance fee. Even if the portfolio manager did do everything he could in terms of hedging it would not change the fact that there is no such thing as a perfect hedge. Even the best executed hedges still leaves a lot of opportunity for substantial or complete failure in a highly leveraged fund.³

How long? In general it is so, that the longer the period used to calculate the performance fee the more it reduces the manager's undesirable incentive to increase risk because it would be more difficult for an opportunistic portfolio manager to change the risk in the fund return in a way that increases the payouts from the performance fee.⁴ However, the problem with longer evaluation periods is that from the portfolio manager's point of view the incentive to maximize profit is also decreased because it amounts to later payments for work done. Consequently, ViamInvest recommends using a 3 years performance fee which can do much of the job of eliminating the undesirable incentive to increase risk but still be an acceptable wait for payments for work done.

³ The famous failure of Long-Term Capital Management in 1998 is illustrative of this point see for example http://en.wikipedia.org/wiki/Long-Term_Capital_Management for a description of this event.

⁴ To repeat, an opportunistic portfolio manager could try to manipulate the returns in the fund, e.g. by using sophisticated derivatives, in order to increase the likelihood that the fund return is exhibiting strong and negative short-term autocorrelation vis a vis the hurdle rate. However, when the performance fee is a long-term fee the gains from such an opportunistic strategy would be practically eliminated because the performance fee would be long enough to encapsulate the negative and short-term autocorrelation. Indeed, the stylized cases shown in Table 2 are depicting exactly such a scenario of strong and short-term negative autocorrelation that is being encapsulated by a long-term performance fee and that therefore eliminates most of the inappropriate payouts that would result from a short-term performance fee. In this regard, it should also be noted that if the cases in Table 2 were made to exhibit zero to strongly positive autocorrelation the effect on the fee payouts resulting from using a long-term performance fee rather than a short-term performance fee would have been minimal.

Remedy 3 - Using a hurdle rate that is alpha neutral

In this text the expression *alpha neutral hurdle rate* is used to characterize a hurdle rate that has nearly zero long-term alpha. To be sure, alpha is the risk adjusted return in excess of the return of a relevant benchmark index. In other words, alpha measures the risk adjusted profitability of a return stream. Indeed, among professional investors alpha has become the single most important measure to judge the performance of investment funds in the capital management industry.⁵ The reason that it is important to use an alpha neutral hurdle rate is that it helps to ensure that the performance fee is neither overpaying nor underpaying the investment manager for capital management delivered. Specifically, if the hurdle rate is strongly alpha positive it seriously reduces the possible income from the performance fee and therefore it also reduces the manager's incentive to maximize the investors' return. Conversely, if the hurdle rate is strongly alpha negative it means that investors are willing to pay performance fees for inferior performance which is absurd. It would very much compare to a situation where the officers of a company received bonuses for every dollar the firm earned above *minus*, say, \$10 millions in EBIT.

Table 3 below shows the effects of changing the performance fee's hurdle rate from being strongly alpha negative to being alpha neutral. Table 3 reuses the two non-leveraged cases from Table 2 above because they are characterized by having strongly alpha negative hurdle rates. As can be seen Table 3 is now augmented so that it also includes alpha calculations for the hurdle rate, the fund return, and the respective return streams to the investors and the performance fee. For all definitions and comments regarding the calculation of the alpha returns please read the notes * to **** in Table 3.

⁵ To be sure, using alpha is not without problems. Most importantly it is too complex a measure to be understood by non-professionals why you seldom see alpha as the key advertising point for retail funds (end-user funds). Complexity arises when deciding on timing issues, on how to risk adjust and how to select a relevant benchmark. Only professional investors are able to judge whether alpha has been calculated appropriately and therefore the measure is useful only to them and not to others. More widespread use of alpha among retail funds could perhaps evolve with future regulation requiring publicly reported alphas to be certified by chartered specialists just like the accounts of publicly traded companies are required to be certified by chartered accountants.

Table 3 - The effects of changing the hurdle rate from strongly alpha negative to alpha neutral

All four cases are now based on a non-leveraged fund setup	Table I, case 1 Alpha negative 1 yr perf. fee	Table III, case 1 Alpha neutral 1 yr perf. fee	Table II, case 3 Alpha negative 3 yrs perf. fee	Table IV, case 3 Alpha neutral 3 yrs perf. fee
Hurdle rate long-term return	0%	8.24%	0%	8.24%
MSCI world index long-term return 1995 - 2007	7.53%	7.53%	7.53%	7.53%
Hurdle rate 'alpha' *	-7.53%	0.71%	-7.53%	0.71%
Average annual fund return	10.00%	10.00%	10.00%	10.00%
Standard deviation fund return	16.46%	16.46%	16.46%	16.46%
Annualized long-term return to fund	8.83%	8.83%	8.83%	8.83%
Average annual return to investors	7.40%	8.22%	8.08%	9.35%
Average annual return to performance fees	2.60%	1.78%	2.02%	0.75%
Annualized long-term return to investors	6.56%	7.29%	7.23%	8.28%
Annualized long-term return to performance fees	2.57%	1.76%	1.96%	0.73%
Investors' share of annual return	74.00%	82.24%	80.00%	92.60%
Performance fees' share of annual return	26.00%	17.76%	20.00%	7.40%
Investors' share of annualized long-term return	71.88%	80.54%	78.69%	91.86%
Perf. fee's share of annualized long-term return	28.12%	19.46%	21.31%	8.14%
Fund 'alpha' **	1.60%	1.52%	1.66%	1.48%
Fund 'alpha' earned by investors ***	-0.97%	-0.24%	-0.30%	0.75%
Fund 'alpha' earned by performance fee ****	2.57%	1.76%	1.96%	0.73%
Investors' share of fund 'alpha'	-60.66%	-16.15%	-18.04%	50.48%
Performance fee's share of fund 'alpha'	160.66%	116.15%	118.04%	49.52%

Notes: The numerical cases given in this table are calculated by use of the same assumptions as given in Table 2 apart from that now the hurdle rate is either fixed at 0% for each year or fixed at 8.24% for each year. Also, none of the cases in Table 3 use leverage. For calculation details see Appendix which also offers more cases to compare than shown in Table 3.

* **The hurdle rate alpha** is approximated by (long-term return of applied hurdle rate) - (long-term return of MSCI world index). This approximation does not adjust the hurdle rate return for beta risk as it should in a more realistic alpha return calculation. The risk adjustment is omitted to simplify and because it is inconsequential. The point is to show that investors are losing money if they allow an investment fund to use a hurdle rate with a strongly negative long-term alpha return. This point is served by the cases in mind and here it is not consequential at all whether alpha is calculated one way or another.

** **Fund alpha** is approximated by (long-term return to investors + long-term return to performance fee) - (long-term return of MSCI world index). Once again this alpha is not adjusted for risk, see note * above.

*** **Fund alpha earned by the investors** is approximated by (long-term return to investors) - (long-term return of MSCI world index). Once again this alpha is not adjusted for risk, see note * above.

**** **Fund alpha earned by the performance fee** is calculated as (total fund alpha) - (fund alpha earned by investors) = (long-term return to performance fee).

Table 3 also contains two new cases that are distinguished by having a fixed hurdle rate of 8.24% that is high enough to make this hurdle rate alpha neutral. The 8.24% is also equal to the annualized long-term return of MSCI's world small cap value index when measured from 1995 to 2007. To be sure, this is the index that ViamInvest will use as the hurdle rate for the calculation of the performance fee in the funds that we will manage. The four non-leveraged cases in Table 3 use either a 1 year performance fee or a 3 years performance fee. When considering the two cases with 1 year fees they look almost the same until you study the respective share of the generated fund alpha that is distributed to the investors and the performance fee. Total fund alpha is about 1.6%. However, when the hurdle rate is alpha negative, the performance fee receives 160.66% of the fund alpha or 2.57% in absolute terms and the investors get only -60.66% of the fund alpha or -0.97% in absolute terms. This situation improves a lot when the hurdle rate is made alpha neutral but the investors are still losing money because they get -16.15% of the positive fund alpha or -0.24% in absolute terms. Of course, as long as the investors get less than zero alpha out of their investments they could be better off by investing in an ordinary index fund that pays zero alpha. Index

funds often have modest management fees and no performance fees. The only case that makes business sense for the investors in Table 3 is the one that uses a 3 years performance fee and an alpha neutral hurdle rate. As can be seen in this case the fund alpha is split 50/50 between the investors and the performance fee. However, to effectively pay the manager 50% of the fund's alpha seems unjustified when we consider that the investors bear all of the downside risk in the fund. Recall, that the manager cannot lose money on the performance fee because it is zero whenever the fund makes less than the hurdle rate.

Remedy 4 - Using a hurdle rate that has strong and positive correlation with fund returns

Table 3 above indicated that in order to secure the investors a reasonably share of the generated fund alpha it is not quite enough to abstain from leverage, use an alpha neutral hurdle rate and a long-term, 3 years performance fee. We also need to use a hurdle rate that is strongly and positively correlated with the fund return. This is shown in Figure 4 below.

Table 4 - The effects of using a hurdle rate with week correlation or one with strong positive correlation

All four cases are now based on a non-leveraged and alpha neutral fund setup	Table III, case 1 Week corr. 1 yr perf. fee	Table V, case 1 Strong corr. 1 yr perf. fee	Table IV, case 3 Week corr. 3 yrs perf. fee	Table VI, case 3 Strong corr. 3 yrs perf. fee
Correlation coefficient hurdle rate vs. fund return	0	1	0	1
Hurdle rate long-term return	8.24%	8.24%	8.24%	8.24%
MSCI world index long-term return 1995 - 2007	7.53%	7.53%	7.53%	7.53%
Hurdle rate 'alpha'	0.71%	0.71%	0.71%	0.71%
Average annual fund return	10.00%	10.00%	10.00%	10.00%
Standard deviation fund return	16.46%	16.46%	16.46%	16.46%
Annualized long-term return to fund	8.83%	8.83%	8.83%	8.83%
Average annual return to investors	8.22%	9.36%	9.35%	9.79%
Average annual return to performance fees	1.78%	0.65%	0.75%	0.31%
Annualized long-term return to investors	7.29%	8.27%	8.28%	8.61%
Annualized long-term return to performance fees	1.76%	0.64%	0.73%	0.30%
Investors' share of annual return	82.24%	93.55%	92.60%	96.97%
Performance fees' share of annual return	17.76%	6.45%	7.40%	3.03%
Investors' share of annualized long-term return	80.54%	92.79%	91.86%	96.59%
Perf. fee's share of annualized long-term return	19.46%	7.21%	8.14%	3.41%
Fund 'alpha'	1.52%	1.38%	1.48%	1.38%
Fund 'alpha' earned by investors	-0.24%	0.74%	0.75%	1.08%
Fund 'alpha' earned by performance fee	1.76%	0.64%	0.73%	0.30%
Investors' share of fund 'alpha'	-16.15%	53.56%	50.48%	78.01%
Performance fee's share of fund 'alpha'	116.15%	46.44%	49.52%	21.99%

Notes: The numerical cases given in this table are calculated by use of the same assumptions as given in Table 3 apart from that now the hurdle rate is either fixed at 8.24% for each year or fixed at 19.55% in even years and fixed at -2% in uneven years. Also, none of the cases in Table 3 use leverage and all cases are now using alpha neutral hurdle rates. All remarks concerning alpha calculations are identical to remarks given in Table 3. For calculation details the cases can be looked up in the Appendix.

Figure 4 reproduces the two non-leveraged and alpha neutral cases from Table 3 and adds two new cases that are similar in all aspects apart from also having a highly correlated hurdle rate. The fixed hurdle rate at 8.24% used in the two non-leveraged and alpha neutral cases from Table 3 is causing the correlation

coefficient with the fund return to be zero. The two new cases have a hurdle rate that is earning respectively -2% in uneven years and 19.55% in even years so that the annualized long-term return of the hurdle rate is still 8.24% but that it now also is perfectly and positively correlated with the fund return. These are phantom data but they still mimic and illustrate a real world investment phenomenon, namely, that investment funds are subject to cycle effects from their respective investment styles. Unless, the hurdle rate is strongly and positively correlated with these investment style cycles the result will be that the performance fee will earn a lot of money not because of prudent asset management but simply because non-favorable cycles from the point of view of the investors are causing large variations in the return spreads between the hurdle rate and the fund return. These variations will naturally be importantly minimized by picking a hurdle rate that is highly and positively correlated with the fund return. To be sure, ViamInvest uses MSCI's global small cap value index because it neutralizes most of the value/growth and small cap/large cap cycle effects that are associated with our investment style. It should be noted that the effect of using a highly and positively correlated hurdle rate is quite dramatic as it can be seen from Table 4 above. In particular, only the case that combines a non-leverage fund setup with a long-term, 3 years performance fee, and a hurdle rate that is alpha neutral and highly correlated with fund returns is able to respectively distribute the fund alpha to the investors and the performance fee so that the traditional performance fee of 20% is effectively also a long-term alpha fee of approximately 20% as it ideally should be. Now consider Table 5 below.

Table 5 - The return sensitivity of ViamInvest's fund setup

Fund setup is now non-leveraged, alpha neutral strongly correlated and it applies 3 years fees	Table VIII, case 3 Strong corr. 3 yrs perf. fee	Table VI, case 3 Strong corr. 3 yrs perf. fee	Table X, case 3 Strong corr. 3 yrs perf. fee
Correlation coefficient hurdle rate vs. fund return	1	1	1
Hurdle rate long-term return	8.24%	8.24%	8.24%
MSCI world index long-term return 1995 - 2007	7.53%	7.53%	7.53%
Hurdle rate 'alpha'	0.71%	0.71%	0.71%
Average annual fund return	8.00%	10.00%	12.00%
Standard deviation fund return	14.41%	16.46%	18.52%
Annualized long-term return to fund	7.09%	8.83%	10.54%
Average annual return to investors	7.95%	9.79%	11.66%
Average annual return to performance fees	0.00%	0.31%	0.63%
Annualized long-term return to investors	7.09%	8.61%	10.10%
Annualized long-term return to performance fees	0.00%	0.30%	0.62%
Investors' share of annual return	100.00%	96.97%	94.89%
Performance fee's share of annual return	0.00%	3.03%	5.11%
Investors' share of annualized long-term return	100.00%	96.59%	94.23%
Perf. fee's share of annualized long-term return	0.00%	3.41%	5.77%
Fund 'alpha'	-0.44%	1.38%	3.19%
Fund 'alpha' earned by investors	-0.44%	1.08%	2.57%
Fund 'alpha' earned by performance fee	0.00%	0.30%	0.62%
Investors' share of fund 'alpha'	100%	78.01%	80.61%
Performance fee's share of fund 'alpha'	0.00%	21.99%	19.39%

Notes: In this table the key difference between the shown 3 cases is that they exhibit different average annual fund returns of respectively 8%, 10% and 12%. The increase or decrease in fund return from the 10% reported in all the cases in Table 1 to Table 4 is obtained from adding or subtracting 4% to the 26% that the fund earns in even years. Otherwise, the cases are calculated by use of the same assumptions as given in Table 4 apart from that all three cases now use ViamInvest's recommended fund setup of being non-leveraged, of using alpha neutral and highly correlated hurdle rates and of applying a long-term, 3 years performance fee. For calculation details the cases can be looked up in the Appendix and for alpha definitions see notes to Table 3.

Table 5 is using the best practice fund setup that ViamInvest recommends and tests it for different assumptions about the mean return of the fund. In particular, what happens if the fund return is increased or decreased from the average annual fund return of 10% that underlies all of the cases in Table 1 to Table 4? Well, if the average annual fund return is reduced to 8% the annualized long-term fund return drops to 7.09% and the fund alpha drops to -0.44%. In this case the performance fee gets 0% of fund alpha and the investors' share of fund alpha will be 100% or -0.44% in absolute terms. Now consider the case where the average annual fund return increases to 12%. In this case the annualized long-term fund return increases to 10.54% and the fund alpha increases to 3.19%. The investors' share of this fund alpha is now 80.61% and the performance fee receives 19.39%. In other words, the fund functions as it should effectively paying about 20% of the generated positive fund alpha to the performance fee and the rest to the investors.

It should be noted that the Appendix to this white paper contains many more cases to show the dynamics of various fee structures and fund setups. However, we have made even more cases than those included in the Appendix. The additional simulation cases can be found in other white papers from ViamInvest. These tests include tests with other phantom data but also simulations using ViamInvest's real world reproduced fund returns. All of our tests point to the same conclusion, namely, that in order to secure that the performance fee works in the best interest of the investors it must use a fund setup that is non-leveraged, uses a long-term, 3 years performance fee and a hurdle rate that is alpha neutral and highly and positively correlated with the fund return. This is best practice for alpha generating investment funds although we will not exclude that leveraged funds could make good business sense in some special situations where it is possible with a very high degree of accuracy to control the downside risks through hedges or because the original (non-leveraged) fund return is extremely unlikely to ever hit negative returns.

Remedy 5 - Using a high water mark provision

The four remedies discussed above are the most important contributors in securing the integrity of the performance fee. However, it is possible to go a small step further by also making the performance fee subject to a high water mark rule implying that no performance fee is paid unless the invested value is higher than its previous greatest value. More specifically, a high water mark provision is defining a loss in invested value as a situation where the fund manager has been unable to beat the hurdle rate. A loss in this sense will be carried forward to the next calculation period for the performance fee and deducted from the performance fee payout of that period. ViamInvest will charge a performance fee as long as the fund return is higher than the hurdle rate and this is also so in the special case where the hurdle rate is more negative than the fund return. To minimize losses is just as valuable an investment management service as to maximize gains so we charge equally in both cases.

A high water mark rule is also sometimes referred to as a *Loss Carry Forward Provision*. To see how it works, consider a fund that starts up with a primo year value of \$100 and increases it to \$110 ultimo the year and then during the second year the value drops back to \$100 ultimo the year. Assume that this increase to \$110 and subsequent drop to \$100 goes on forever. Such a fund would earn an interest of 0% in the long-term. Now, assume a performance fee is calculated each year as 20% of any positive return and that the fund does not use a high water mark. In this case the portfolio manager would be able to charge a performance fee of 2% (10%*20%) of the fund value every second year and nothing in the years in between. This compares to a long-term return to the portfolio manager of 1% and a long-term return of minus 0.909% to the investors. However, if the investors are protected by a high water mark the portfolio manager will only earn a performance fee of 2% in the first year and thereafter nothing at all because the fund value will remain below its first year peak value of \$110. In other words, this case shows that the high water mark does not protect the investors at all in the startup phase but they are in principle fully protected thereafter (in the long-term).⁶

Unfortunately, high water marks may not offer any protection in the long-term either because the long-term may never materialize in the case of a large fund loss. High water marks are intended to reduce the incentive to increase risk in funds that charge performance fees by preventing performance fee payout unless previous peak values are exceeded. However, funds that lose much of their value in one year typically choose to, or are forced to, close down. It will take years to recover from a big loss so everybody knows that there will be no bonuses for years. This may cause employees to leave and prevent the fund from hiring new employees. In other words, a fund with a huge recent loss and a high water mark and a short-term performance fee is very likely to close down and perhaps start up again with a 'fresh record' effectively sidestepping the high water mark provision when it is most needed.

⁶ It should also be noted that if the calculation period of the performance fee was extended to 24 months instead of 12 months then the investors in this case would be fully protected against losses in both the short-term and the long-term and even without the high water mark. However, that is to some extent the fortunate result of this specific case and it is not a general implication. The general implication is that the longer the evaluation period of the performance fee the gradually better is the short-term and the long-term investor protection as showed in the section on remedy 2.

Not all types of funds with high water marks are equally likely to close down when they hit a huge annual loss vis a vis their hurdle rate. In particular, the funds that ViamInvest manages are very unlikely to close for this reason because:

1. **We recommend using a long-term performance fee** that minimizes the chance that we will not be able to beat our hurdle rate.⁷
2. **We use a highly correlated hurdle rate** that further minimizes the chance that we will not be able to beat our hurdle rate.
3. **We abstain from leverage** the key reason to encounter a huge loss.
4. **We have good reasons to believe that our investment system** is much more likely to over perform than to underperform and therefore also is more likely to redeem a loss during the next calculation period for our performance fee. Our beliefs are substantiated by the reproduced performance data that we have made to indicate the potential profitability of our quantitative investment system.
5. **We recommend using a multi-series fund** that issue new share series every month thereby spreading the risk on several series and therefore decreases the chance that all series in a year will underperform.⁸

To sum up, a high water mark offers no protection against improper performance fee payments in startup funds and they only work in the long-term as long as the fund continues to be in business. These problems with the high water mark provision stresses that it is important always to use it in combination with other performance fee remedies, such as, a long-term performance fee and abstaining from leverage to decrease the risk of fund closure. Nevertheless, for funds that are very likely to be in continued business for many years ahead it makes good sense to use a high water mark because it ensures that the performance fee is not paid out unless the manager continues to increase the value of the investments.⁹ To be sure, ViamInvest recommends using the additional protection of a high water mark. We recommend it also to promote investor loyalty by giving the investors an extra incentive to keep reinvesting their money in the funds that ViamInvest manages.

⁷ To elaborate, if the fund uses a long-term performance fee the likelihood that it will be affected by a huge annual loss is much less simply because the longer time span makes it much less likely that the fund will be unable to recover from an annual loss within the long-term evaluation period of the performance fee or in the subsequent long-term period used to calculate the next performance fee that will be subject to the high water mark. Indeed, the 3 years performance fee recommended by ViamInvest will give us in total 6 years (3 + 3) to recover from an annual loss. This should be plenty of time to make it very unlikely that our subsequent performance fee will ever have to be reduced to zero as a result of a water mark provision and a high loss in a single year in the first 3 years period.

⁸ More specifically, with regard to the recommended multi-series funds (see Section 3.2.6) ViamInvest's employees and owners will receive bonuses from the performance fee on a continuous basis because these funds issue new investment certificates/shares-series several times during the year and the result is therefore also a system that pays performance fees several times a year because all certificates redeem or are reinvested 3 years later during which the performance fees are calculated and paid. In other words, it is unlikely that such a multi-series fund will ever come in a situation where a huge annual loss will trigger fund closure as a result of the implications of the high water mark.

⁹ In ViamInvest's case the high water mark is doing a job similar to a symmetric performance fee but without exposing the management company to serious budget risks. To be sure, a symmetric performance fee is required to pay back the investors to the degree that the hurdle rate is not outperformed. Because of the involved budget risks such fees are seldom used or they are capped to a degree that removes most of their return-maximizing incentives.

Remedy 6 - Using a multi-series fund for fee calculation

It is unfortunately by no means trivial to calculate a performance fee in a real world investment fund where investors are going in and out of the fund at different times and where the fund needs to obey its legally required non-dilution obligations.¹⁰ In fact there are three different approaches to performance fee calculation and they all have their benefits and weaknesses. The three kinds of funds are: 1) A multi-series fund with finite certificate series. 2) A single-series fund with an infinite certificate series. 3) A single-series fund with an infinite certificate series and equalization. These three approaches are listed below with a discussion of their weaknesses and benefits in order to understand why ViamInvest once again recommends the approach that is most beneficial from the investors' point of view.

1) A multi-series fund with finite certificate series: ViamInvest recommends using a multi-series fund because it is the only fund structure that guarantees accurate and transparent calculation of the performance fee. In other words, all investors get exactly what they are supposed to get and it is possible for the investor to recalculate and check that the performance fee is indeed paid according to the rules specified by the fund. The catch is that it requires the fund to issue a new certificate series (series of shares) each time new money is invested in the fund. For example, ViamInvest recommends allowing for new fund investments once a month and this implies the fund needs to issue 12 new certificate series during the year. Furthermore, if the performance fee is calculated every third year it is also necessary to run each certificate series for 3 years before they automatically redeem, pay performance fees and reinvest the proceeds in a new series. This means that the fund needs to administrate $12 * 3 = 36$ outstanding certificate series which is more costly to administrate than a fund with only one outstanding certificate series that runs forever. The strength of the multi-series approach is that it calculates the performance fee for each outstanding series and thereby enables the correct timing for the performance fee calculation, namely, from the day of the certificate issue to the day of the certificate redemption.

One way to cut the administration cost of a multi-series fund is to decrease the issue and redemption frequency, for instance, to 4 times a year. However, that also means the fund will be less liquid with longer time to the first exit opportunity which is something that most investors don't find very attractive. The multi-series fund approach is common for funds with mainly professional investors such as hedge funds because these investors are more demanding in terms of being correctly billed than retail customers that in all likelihood don't even know there is an issue. Moreover, time is working for multi-series funds because increasingly automated IT administration systems are lowering the cost of running multi-series funds. Apart from costs another potential problem with multi-series funds is that they need to redeem the certificate series at the time the performance fee is calculated. In many countries the tax authorities do not understand that this is a technical necessity in order to make an accurate calculation of the performance fee. It does not mean the investor is withdrawing funds because the redemption proceeds are automatically reinvested in a new certificate series in the same fund. Nevertheless, the tax authorities of many countries treat it as a withdrawal of funds and require capital gain taxes to be paid. Fortunately, many countries do also not require capital gain taxes to be paid for investments that are 3 years old or older and this is another good reason to choosing a long-term, 3 years performance fee.

¹⁰ To be sure, these are the obligations that require the value of the shares of existing fund investors not to be diluted when other investors redeem their shares or pay performance fees on their shares.

2) A single-series fund with an infinite certificate series: Many retail funds are designed to allow for issue and redemption of shares/investment certificates on a daily basis. This makes them very liquid from the investors' point of view but one catch is that it would be very costly to structure such funds as multi-series funds with accurate and transparent performance fee calculation. Indeed, in ViamInvest case where we recommend using 3 years performance fees a multi-series fund with daily issues and redemptions would require $220 \text{ (annual trading days)} * 3 = 660$ outstanding certificate series to keep track of and to adjust for dilution of shares at every trading day of the year. Furthermore, if the fund has more than one stock class you also need to multiply the 660 outstanding series with the number of stock classes.¹¹ The administration of such a fund would only be possible using a highly automated IT system and we at ViamInvest are not sure such systems currently exist but we are sure they will be made available to fund administrators at some time in the future.

The alternative to use a multi-series fund with finite certificate series is to use a single-series fund with one series that runs forever or until the fund is dissolved. Most mutual funds are structured as single-series funds with infinite certificate series because they are so simple to administrate and calculate that you could do it manually by pen a paper although today it is done in fully automatic IT systems. However, single series funds do not work well with performance fees because they cannot time the performance fee calculation correctly with respect to individual investors that enter and exit the fund at different times. Since there is only one series to calculate the performance fee on and this series accounts for 100% of the fund's value this approach is often referred to as *the whole of fund approach for performance fee calculation*.

A single-series fund with daily issues and redemptions may calculate the performance fee on a daily basis but charge it on an annual basis often using the calendar year. To see how such a fund using an annually asymmetric performance fee miscalculates the fee with regard to their individual investors consider the following two cases:¹² **Case 1** - The fund performs well in the first six months of the year beating the return of the hurdle rate and for the remaining 6 months of the year it performs similar to the hurdle rate. In this case investors that enter the fund in the middle of the year will be charged a performance fee at the end of the year in spite of not having earned any abnormal return on their investment. **Case 2** - The fund performs poorly compared to the hurdle rate in the first six months of the year but for the last 6 months of the year it regains exactly the amount that were generated in negative performance fees in the first 6 months so that the annual performance fee is zero. Informed investors that see the negative accumulation of performance fees in the first 6 months of the year would know that by entering the fund midyear they would be able to earn abnormal returns during the rest of the year without having to pay the full performance fee, if any, because the negative performance fees earned in the start of the year would have

¹¹ Several stock classes in one fund are sometimes used to differentiate the management fees for small retail investors and large institutional investors.

¹² To be sure, an annually asymmetric performance fee in a fund that calculates its performance fee on a daily basis but charges it on an annual basis is a performance fee that uses a symmetric performance fee calculation for the daily calculations so that negative daily fees will neutralize positive daily fees when summarized during the year but that if the cumulated year-end-fee is negative the charged annual performance fee will be set to zero. It should be noted that funds that issue and redeem shares on a daily basis in a single series fund should also calculate the performance fee on a daily basis in order to correctly adjust the nominal size of the fee with regard to the daily changes in the size of the invested capital in the fund. If the fund does not calculate its performance fees on a daily basis the miscalculation of the performance fee in a single-series fund would be even worse than it already is.

to be deducted from any positive performance fees made from abnormal performance in the last 6 months of the year. This means that more informed investors will be able to enter and exit the fund on optimal times and thereby end up paying less performance fees on average than less informed investors that don't see this opportunity. In fact, smaller investors will not be able to enter and exit to exploit this opportunity even if they understood how it worked because they often pay sizable distribution fees that larger investors typically do not pay. So in this case smaller investors would be discriminated. Case 1 and case 2 should make it quite clear that single-series funds have a problem when it comes to performance fee calculations because it is rather arbitrary which investors that are charged for them in the end and it also gives larger and more informed investors an opportunity to free-ride on the incomes to smaller and less sophisticated investors.

3) A single-series fund with an infinite certificate series and equalization: In such a fund it should be possible to pay correct performance fees despite being single-series.¹³ The trick is to calculate a credit or a deficit for each investor that enters or exits the fund so that the miscalculation with regard to the performance fee is neutralized. Such adjustments are called equalizations. However, the underlying calculations should be very complex and more so the more investors in the fund and the more frequent the annual issue and redemption frequency. For that reason equalization is not used in funds that allow for daily issue and redemptions of shares because it multiplies the complexity of the equalization calculations when the frequency of the annual issues and redemptions is increased. In this sense the single-series fund with equalization is similar to the multi-series fund and both fund types are therefore only used in situations where the annual issue and redemption frequency is low. However, the equalization calculations are known for being non-transparent and very difficult to comprehend whereas the basic calculation in the multi-series fund is actually simple although they have to be repeated for each series. For these reasons multi-series funds are often preferred because they are accurate like the single-series fund with equalization but they are also easier to understand with regard to how the performance fee is calculated. One notable exception is exchange traded funds. It is obviously an advantage to have a single-series fund when it is listed on an exchange because it increases the liquidity of that series instead of having the trade spread over multiple series. Furthermore, some exchanges do not allow funds to list more than one series from one fund.

Comparing the three fund solutions: Each of the three mentioned fund setups has their pros and cons. Solution 1, the multi-series fund, is preferred in situations where the investors care much about being billed correctly and transparently but do not think it is a huge problem that it can take 2 to 6 weeks to liquidate their investments. Solution 3, the single-series fund with equalization, is preferred in situations where investors care much about being billed correctly but also want to be able to trade their shares on the stock exchange. Solution 2, the single-series fund without equalization, is preferred in situations where the investors only care about being as liquid as possible in any situation. Solution 2 and Solution 3 will be equally liquid if the fund in mind is a large fund that is distributed to thousands of investors because such a fund will have a highly liquid stock market. However, for small funds with few investors the fund's liquidity is mostly a function of how often the fund allows for issue and redemption of shares. In this situation Solution 2 with daily issues and redemptions will be more liquid than Solution 3 the equalized fund were the typical frequency is weekly or monthly.

¹³ We say *should be* because at ViamInvest we have not yet seen any complete documentation that a single-series fund with equalization is able to calculate the performance fee exactly as it would be done in a multi-series fund.

Concluding remarks

The text above explained why asymmetric performance fees will end up doing much more harm than good from the investors' point of view unless the fees' undesirable incentive to increase risk is thoroughly checked. ViamInvest recommends using the following six remedies to check the performance fee:

- **Remedy 1 - Abstaining from leverage of investments.** This is needed to minimize the return variability. In general, more leverage is likely to decrease the long-term investor return mainly because of much larger payouts to the performance fee. More leverage is furthermore certain to increase the performance fee's payouts, to increase the investors' risk, to increase the fund's risk and in many cases it can even decrease the long-term fund return.
- **Remedy 2 - Using a long evaluation period for fee calculation.** This is basically a means to insure against improper performance fee payouts that are caused by short-term and negative autocorrelation between the fund return and the hurdle rate of the performance fee. Such autocorrelation can happen arbitrarily or as a result of manipulation. In either case its negative impact on the investor's return can be dealt with effectively by using a 3 years performance fee.
- **Remedy 3 - Using a hurdle rate that is alpha neutral.** The problem with a hurdle rate that is strongly alpha negative is that it results in performance fee payouts even when the investment manager underperforms vis a vis the market return. Moreover, the problem with a strongly alpha positive hurdle rate is that it under-compensates the investment manager and thereby decreases the desirable return maximizing incentive of the performance fee.
- **Remedy 4 - Using a hurdle rate that is highly and positively correlated with the fund returns.** Remedy 4 is needed to minimize the chance that the performance fee is paid out not for prudent asset management but simply because of arbitrary statistical noise in the fund return versus the hurdle rate or because of investment style related cycle effects.
- **Remedy 5 - Using a high water mark provision.** This provision is needed to make the asymmetric performance fee pay similarly in the long-term as a symmetric performance fee but without the detrimental budgetary consequences of a symmetric performance fee. However, remedy 5 offers no protection to the investors if the long-term never materializes so for this reason it should be used in conjunction with remedy 1, 2, 4 and 6 as they will increase the fund's survival rate.
- **Remedy 6 - Using a multi-series fund for fee calculation.** This remedy is needed to secure that the performance fee is calculated in an accurate and transparent way that is easy to verify by the paying investors. No other fund structure can secure both of these issues simultaneously.

This combined system of performance fee remedies creates the strongest and most appropriate incentives that are possible today for any performance fee that can be applied in the industry of investment management. An objection could be that symmetric performance fees could do as well as the prescribed system. However, this is not true, because symmetric performance fees creates detrimental budgetary problems that can only be dealt with by curbing the maximum payouts and losses from the performance fee thereby effectively destroying most of the attractive return maximizing incentive that was the original reason for introducing the performance fee. The remedy system that ViamInvest recommends is the only one that fully preserves the return maximizing incentives of the fee while also not exposing the investors to excessive risk taking. To be sure, funds that are managed by ViamInvest will apply remedy 1, 3 and 4. The other remedies are optional but recommended given the circumstances.

Appendix - Simulated returns for alternative fund setups

This appendix contains a series of simple and easy to verify simulations that show how various investment fund setups will affect the distribution of return to the investors and the performance fee.

All simulations included in this appendix use the following simplifying assumptions.

1. The fund is able to earn 26% in even years and -6% in uneven years in order to generate 10% in average annual return and 16.46% in standard deviation. In other words, the simulations in this appendix are based on phantom data and not on real world data.
2. All simulations earning a different average than 10% simply subtract or add to the 26% in the even years and leave the -6% in the uneven years unchanged.
3. For simulations with a hurdle rate correlation of 1 the hurdle rate is 19.55% in even years and -2% in uneven years. The -2% in uneven years is deliberately selected to make an importantly less than perfect hurdle rate thereby increasing the realism of the simulations. Specifically, the hurdle rate is $-2\% - (-6\%) = 4\%$ above the fund return in uneven years implying no performance fees for that year when calculated on an annual basis.
4. The performance fee is 20% of the return in excess of the hurdle rate and it is 0% otherwise.
5. The performance fee is calculated for either 12 months or for 36 months and reinvestment is made once at the end of the performance fee calculation period.
6. The fund is able to borrow at 4.75% for leverage up to 75% of debt in total gross investment.

Applied formulas:

- The annualized long-term returns are calculated using $EndOfIndexValue^{\frac{1}{n}} - 1$, where n is the number of years the index is growing from a value of 1. They are reported at the end of each index in the shown tables.
- For alpha calculations see notes to Table 3 in the section on remedy 3.
- Otherwise means, standard deviations and correlation coefficients are calculated the usual way.

Table I - 0% leverage or 75% when 1 year fees, hurdle rate is 0%, its correlation is 0 and return is 10%

Case 1: Performance fee 1 year evaluation period - Non-leveraged fund													
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return					7,53%				
Leverage: % debt of total capital		0,00%		1,00		0,00		Peer group: MSCI world SC value index 1995-2007		8,24%			
Leverage borrowing rate		4,75%		Peer group 'alphaLT': World SC value - world					0,71%				
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth				
2009	-6,00%	-6,00%	1,00	0,00%	1,00	0,00%	1,00	-6,00%	1,00				
2010	26,00%	26,00%	0,94	0,00%	1,00	5,20%	1,00	20,80%	0,94				
2011	-6,00%	-6,00%	1,18	0,00%	1,00	0,00%	1,05	-6,00%	1,14				
2012	26,00%	26,00%	1,11	0,00%	1,00	5,20%	1,05	20,80%	1,07				
2013	-6,00%	-6,00%	1,40	0,00%	1,00	0,00%	1,11	-6,00%	1,29				
2014	26,00%	26,00%	1,32	0,00%	1,00	5,20%	1,11	20,80%	1,21				
2015	-6,00%	-6,00%	1,66	0,00%	1,00	0,00%	1,16	-6,00%	1,46				
2016	26,00%	26,00%	1,56	0,00%	1,00	5,20%	1,16	20,80%	1,38				
2017	-6,00%	-6,00%	1,97	0,00%	1,00	0,00%	1,22	-6,00%	1,66				
2018	26,00%	26,00%	1,85	0,00%	1,00	5,20%	1,22	20,80%	1,56				
2019	-6,00%	-6,00%	2,33	0,00%	1,00	0,00%	1,29	-6,00%	1,89				
2020	26,00%	26,00%	2,19	0,00%	1,00	5,20%	1,29	20,80%	1,77				
2021	-6,00%	-6,00%	2,76	0,00%	1,00	0,00%	1,36	-6,00%	2,14				
2022	26,00%	26,00%	2,59	0,00%	1,00	5,20%	1,36	20,80%	2,02				
2023	-6,00%	-6,00%	3,27	0,00%	1,00	0,00%	1,43	-6,00%	2,43				
2024	26,00%	26,00%	3,07	0,00%	1,00	5,20%	1,43	20,80%	2,29				
2025	-6,00%	-6,00%	3,87	0,00%	1,00	0,00%	1,50	-6,00%	2,76				
2026	26,00%	26,00%	3,64	0,00%	1,00	5,20%	1,50	20,80%	2,60				
2027			4,59		1,00		1,58		3,14				
Mean	10,00%	10,00%	8,83%	0,00%	0,00%	2,60%	2,57%	7,40%	6,56%				
StDev	16,46%	16,46%		0,00%		2,68%		13,79%					
Added annual returns = Performance fee return + Investor return						10,00%							
Share of annual return						26,00%		74,00%					
Added annualized LT returns = Performance fee LT return + Investor LT return							9,13%						
Share of annualized LT return							28,12%		71,88%				
Correlation: Leveraged fund return vs. hurdle rate				0,00									
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return						-7,53%							
Investor 'alpha' = Investor LT return - MSCI world LT return											-0,97%		
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											1,60%		
Fund alpha distribution by absolute share						2,57%							-0,97%
Fund alpha distribution by relative share						160,66%							-60,66%
Case 2: Performance fee 1 year evaluation period - Leveraged fund													
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return					7,53%				
Leverage: % debt of total capital		75,00%		4,00		3,00		Peer group: MSCI world SC value index 1995-2007		8,24%			
Leverage borrowing rate		4,75%		Peer group 'alphaLT': World SC value - world					0,71%				
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth				
2009	-6,00%	-38,25%	1,00	0,00%	1,00	0,00%	1,00	-38,25%	1,00				
2010	26,00%	89,75%	0,62	0,00%	1,00	17,95%	1,00	71,80%	0,62				
2011	-6,00%	-38,25%	1,17	0,00%	1,00	0,00%	1,18	-38,25%	1,06				
2012	26,00%	89,75%	0,72	0,00%	1,00	17,95%	1,18	71,80%	0,66				
2013	-6,00%	-38,25%	1,37	0,00%	1,00	0,00%	1,39	-38,25%	1,13				
2014	26,00%	89,75%	0,85	0,00%	1,00	17,95%	1,39	71,80%	0,69				
2015	-6,00%	-38,25%	1,61	0,00%	1,00	0,00%	1,64	-38,25%	1,19				
2016	26,00%	89,75%	0,99	0,00%	1,00	17,95%	1,64	71,80%	0,74				
2017	-6,00%	-38,25%	1,88	0,00%	1,00	0,00%	1,94	-38,25%	1,27				
2018	26,00%	89,75%	1,16	0,00%	1,00	17,95%	1,94	71,80%	0,78				
2019	-6,00%	-38,25%	2,21	0,00%	1,00	0,00%	2,28	-38,25%	1,34				
2020	26,00%	89,75%	1,36	0,00%	1,00	17,95%	2,28	71,80%	0,83				
2021	-6,00%	-38,25%	2,59	0,00%	1,00	0,00%	2,69	-38,25%	1,43				
2022	26,00%	89,75%	1,60	0,00%	1,00	17,95%	2,69	71,80%	0,88				
2023	-6,00%	-38,25%	3,03	0,00%	1,00	0,00%	3,18	-38,25%	1,51				
2024	26,00%	89,75%	1,87	0,00%	1,00	17,95%	3,18	71,80%	0,93				
2025	-6,00%	-38,25%	3,55	0,00%	1,00	0,00%	3,75	-38,25%	1,60				
2026	26,00%	89,75%	2,19	0,00%	1,00	17,95%	3,75	71,80%	0,99				
2027			4,16		1,00		4,42		1,70				
Mean	10,00%	25,75%	8,25%	0,00%	0,00%	8,98%	8,60%	16,78%	3,00%				
StDev	16,46%	65,86%		0,00%		9,24%		56,62%					
Added annual returns = Performance fee return + Investor return						25,75%							
Share of annual return						34,85%		65,15%					
Added annualized LT returns = Performance fee LT return + Investor LT return							11,60%						
Share of annualized LT return							74,16%		25,84%				
Correlation: Leveraged fund return vs. hurdle rate				0,00									
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return						-7,53%							
Investor 'alpha' = Investor LT return - MSCI world LT return											-4,53%		
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											4,07%		
Fund alpha distribution by absolute share						8,60%							-4,53%
Fund alpha distribution by relative share						211,26%							-111,26%

Table II - 0% leverage or 75% when 3 years fees, hurdle rate is 0%, its correlation is 0 and return is 10%

Case 3: Performance fee 3 years evaluation period - Non-leveraged fund												
Performance fee	20,00%		Benchmark: MSCI world index 1995-2007, LT return						7,53%			
Leverage: % debt of total capital	0,00%		1,00		0,00		Peer group: MSCI world SC value index 1995-2007				8,24%	
Leverage borrowing rate	4,75%		Peer group 'alphaLT': World SC value - world						0,71%			
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-6,00%	1,00		0,00%	1,00				1,00	1,00	
2010	26,00%	26,00%	0,94		0,00%	1,00						
2011	-6,00%	-6,00%	1,18	11,33%	0,00%	1,00	0,00%	2,27%		9,07%		
2012	26,00%	26,00%	1,11		0,00%	1,00			1,02		1,09	
2013	-6,00%	-6,00%	1,40		0,00%	1,00						
2014	26,00%	26,00%	1,32	49,23%	0,00%	1,00	0,00%	9,85%		39,39%		
2015	-6,00%	-6,00%	1,66		0,00%	1,00			1,12		1,52	
2016	26,00%	26,00%	1,56		0,00%	1,00						
2017	-6,00%	-6,00%	1,97	11,33%	0,00%	1,00	0,00%	2,27%		9,07%		
2018	26,00%	26,00%	1,85		0,00%	1,00			1,15		1,66	
2019	-6,00%	-6,00%	2,33		0,00%	1,00						
2020	26,00%	26,00%	2,19	49,23%	0,00%	1,00	0,00%	9,85%		39,39%		
2021	-6,00%	-6,00%	2,76		0,00%	1,00			1,26		2,31	
2022	26,00%	26,00%	2,59		0,00%	1,00						
2023	-6,00%	-6,00%	3,27	11,33%	0,00%	1,00	0,00%	2,27%		9,07%		
2024	26,00%	26,00%	3,07		0,00%	1,00			1,29		2,52	
2025	-6,00%	-6,00%	3,87		0,00%	1,00						
2026	26,00%	26,00%	3,64	49,23%	0,00%	1,00	0,00%	9,85%		39,39%		
2027			4,59			1,00			1,42		3,51	
Mean	10,00%	10,00%	8,83%	10,09%	0,00%	0,00%	0,00%	2,02%	1,96%	8,08%	7,23%	
StDev	16,46%	16,46%	6,92%	6,92%	0,00%	0,00%	0,00%	1,38%	1,38%	5,54%	5,54%	
Added annual returns = Performance fee return + Investor return								10,09%				
Share of annual return								20,00%		80,00%		
Added annualized LT returns = Performance fee LT return + Investor LT return								9,19%				
Share of annualized LT return								21,31%		78,69%		
Correlation: Leveraged fund return vs. hurdle rate					0,00		0,00					
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return							-7,53%					
Investor 'alpha' = Investor LT return - MSCI world LT return											-0,30%	
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											1,66%	
Fund alpha distribution by absolute share								1,96%		-0,30%		
Fund alpha distribution by relative share								118,04%		-18,04%		
Case 4: Performance fee 3 years evaluation period - Leveraged fund												
Performance fee	20,00%		Benchmark: MSCI world index 1995-2007, LT return						7,53%			
Leverage: % debt of total capital	75,00%		4,00		3,00		Peer group: MSCI world SC value index 1995-2007				8,24%	
Leverage borrowing rate	4,75%		Peer group 'alphaLT': World SC value - world						0,71%			
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-38,25%	1,00		0,00%	1,00				1,00	1,00	
2010	26,00%	89,75%	0,62		0,00%	1,00						
2011	-6,00%	-38,25%	1,17	-27,65%	0,00%	1,00	0,00%	0,00%		-27,65%		
2012	26,00%	89,75%	0,72		0,00%	1,00			1,00		0,72	
2013	-6,00%	-38,25%	1,37		0,00%	1,00						
2014	26,00%	89,75%	0,85	122,33%	0,00%	1,00	0,00%	24,47%		97,87%		
2015	-6,00%	-38,25%	1,61		0,00%	1,00			1,24		1,43	
2016	26,00%	89,75%	0,99		0,00%	1,00						
2017	-6,00%	-38,25%	1,88	-27,65%	0,00%	1,00	0,00%	0,00%		-27,65%		
2018	26,00%	89,75%	1,16		0,00%	1,00			1,24		1,04	
2019	-6,00%	-38,25%	2,21		0,00%	1,00						
2020	26,00%	89,75%	1,36	122,33%	0,00%	1,00	0,00%	24,47%		97,87%		
2021	-6,00%	-38,25%	2,59		0,00%	1,00			1,55		2,05	
2022	26,00%	89,75%	1,60		0,00%	1,00						
2023	-6,00%	-38,25%	3,03	-27,65%	0,00%	1,00	0,00%	0,00%		-27,65%		
2024	26,00%	89,75%	1,87		0,00%	1,00			1,55		1,48	
2025	-6,00%	-38,25%	3,55		0,00%	1,00						
2026	26,00%	89,75%	2,19	122,33%	0,00%	1,00	0,00%	24,47%		97,87%		
2027			4,16			1,00			1,93		2,93	
Mean	10,00%	25,75%	8,25%	15,78%	0,00%	0,00%	0,00%	4,08%	3,72%	11,70%	6,16%	
StDev	16,46%	65,86%	27,38%	27,38%	0,00%	0,00%	0,00%	4,47%	4,47%	22,92%	22,92%	
Added annual returns = Performance fee return + Investor return								15,78%				
Share of annual return								25,84%		74,16%		
Added annualized LT returns = Performance fee LT return + Investor LT return								9,88%				
Share of annualized LT return								37,61%		62,39%		
Correlation: Leveraged fund return vs. hurdle rate					0,00		0,00					
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return							-7,53%					
Investor 'alpha' = Investor LT return - MSCI world LT return											-1,37%	
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											2,35%	
Fund alpha distribution by absolute share								3,72%		-1,37%		
Fund alpha distribution by relative share								158,26%		-58,26%		

Table III - 0% leverage or 75% when 1 year fees, hurdle rate is alpha neutral, its correlation is 0 and return is 10%

Case 1: Performance fee 1 year evaluation period - Non-leveraged fund												
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return		7,53%						
Leverage: % debt of total capital		0,00%		1,00		0,00		Peer group: MSCI world SC value index 1995-2007		8,24%		
Leverage borrowing rate		4,75%						Peer group 'alphaLT': World SC value - world		0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth			
2009	-6,00%	-6,00%	1,00	8,24%	1,00	0,00%	1,00	-6,00%	1,00			
2010	26,00%	26,00%	0,94	8,24%	1,08	3,55%	1,00	22,45%	0,94			
2011	-6,00%	-6,00%	1,18	8,24%	1,17	0,00%	1,04	-6,00%	1,15			
2012	26,00%	26,00%	1,11	8,24%	1,27	3,55%	1,04	22,45%	1,08			
2013	-6,00%	-6,00%	1,40	8,24%	1,37	0,00%	1,07	-6,00%	1,32			
2014	26,00%	26,00%	1,32	8,24%	1,49	3,55%	1,07	22,45%	1,25			
2015	-6,00%	-6,00%	1,66	8,24%	1,61	0,00%	1,11	-6,00%	1,52			
2016	26,00%	26,00%	1,56	8,24%	1,74	3,55%	1,11	22,45%	1,43			
2017	-6,00%	-6,00%	1,97	8,24%	1,88	0,00%	1,15	-6,00%	1,76			
2018	26,00%	26,00%	1,85	8,24%	2,04	3,55%	1,15	22,45%	1,65			
2019	-6,00%	-6,00%	2,33	8,24%	2,21	0,00%	1,19	-6,00%	2,02			
2020	26,00%	26,00%	2,19	8,24%	2,39	3,55%	1,19	22,45%	1,90			
2021	-6,00%	-6,00%	2,76	8,24%	2,59	0,00%	1,23	-6,00%	2,33			
2022	26,00%	26,00%	2,59	8,24%	2,80	3,55%	1,23	22,45%	2,19			
2023	-6,00%	-6,00%	3,27	8,24%	3,03	0,00%	1,28	-6,00%	2,68			
2024	26,00%	26,00%	3,07	8,24%	3,28	3,55%	1,28	22,45%	2,52			
2025	-6,00%	-6,00%	3,87	8,24%	3,55	0,00%	1,32	-6,00%	3,08			
2026	26,00%	26,00%	3,64	8,24%	3,84	3,55%	1,32	22,45%	2,90			
2027			4,59		4,16		1,37		3,55			
Mean	10,00%	10,00%	8,83%	8,24%	8,24%	1,78%	1,76%	8,22%	7,29%			
StDev	16,46%	16,46%		0,00%		1,83%		14,64%				
Added annual returns = Performance fee return + Investor return						10,00%						
Share of annual return						17,76%		82,24%				
Added annualized LT returns = Performance fee LT return + Investor LT return								9,05%				
Share of annualized LT return								19,46%				
Correlation: Leveraged fund return vs. hurdle rate								0,00				
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return								0,71%				
Investor 'alpha' = Investor LT return - MSCI world LT return								-0,24%				
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return								1,52%				
Fund alpha distribution by absolute share								1,76%				
Fund alpha distribution by relative share								116,15%				
Case 2: Performance fee 1 year evaluation period - Leveraged fund												
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return		7,53%						
Leverage: % debt of total capital		75,00%		4,00		3,00		Peer group: MSCI world SC value index 1995-2007		8,24%		
Leverage borrowing rate		4,75%						Peer group 'alphaLT': World SC value - world		0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth			
2009	-6,00%	-38,25%	1,00	8,24%	1,00	0,00%	1,00	-38,25%	1,00			
2010	26,00%	89,75%	0,62	8,24%	1,08	16,30%	1,00	73,45%	0,62			
2011	-6,00%	-38,25%	1,17	8,24%	1,17	0,00%	1,16	-38,25%	1,07			
2012	26,00%	89,75%	0,72	8,24%	1,27	16,30%	1,16	73,45%	0,66			
2013	-6,00%	-38,25%	1,37	8,24%	1,37	0,00%	1,35	-38,25%	1,15			
2014	26,00%	89,75%	0,85	8,24%	1,49	16,30%	1,35	73,45%	0,71			
2015	-6,00%	-38,25%	1,61	8,24%	1,61	0,00%	1,57	-38,25%	1,23			
2016	26,00%	89,75%	0,99	8,24%	1,74	16,30%	1,57	73,45%	0,76			
2017	-6,00%	-38,25%	1,88	8,24%	1,88	0,00%	1,83	-38,25%	1,32			
2018	26,00%	89,75%	1,16	8,24%	2,04	16,30%	1,83	73,45%	0,81			
2019	-6,00%	-38,25%	2,21	8,24%	2,21	0,00%	2,13	-38,25%	1,41			
2020	26,00%	89,75%	1,36	8,24%	2,39	16,30%	2,13	73,45%	0,87			
2021	-6,00%	-38,25%	2,59	8,24%	2,59	0,00%	2,47	-38,25%	1,51			
2022	26,00%	89,75%	1,60	8,24%	2,80	16,30%	2,47	73,45%	0,93			
2023	-6,00%	-38,25%	3,03	8,24%	3,03	0,00%	2,88	-38,25%	1,62			
2024	26,00%	89,75%	1,87	8,24%	3,28	16,30%	2,88	73,45%	1,00			
2025	-6,00%	-38,25%	3,55	8,24%	3,55	0,00%	3,35	-38,25%	1,73			
2026	26,00%	89,75%	2,19	8,24%	3,84	16,30%	3,35	73,45%	1,07			
2027			4,16		4,16		3,89		1,85			
Mean	10,00%	25,75%	8,25%	8,24%	8,24%	8,15%	7,84%	17,60%	3,49%			
StDev	16,46%	65,86%		0,00%		8,39%		57,47%				
Added annual returns = Performance fee return + Investor return						25,75%						
Share of annual return						31,65%		68,35%				
Added annualized LT returns = Performance fee LT return + Investor LT return								11,33%				
Share of annualized LT return								69,20%				
Correlation: Leveraged fund return vs. hurdle rate								0,00				
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return								0,71%				
Investor 'alpha' = Investor LT return - MSCI world LT return								-4,04%				
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return								3,80%				
Fund alpha distribution by absolute share								7,84%				
Fund alpha distribution by relative share								206,16%				

Table IV - 0% leverage or 75% when 3 years fees, hurdle rate is alpha neutral, its correlation is 0 and return is 10%

Case 3: Performance fee 3 years evaluation period - Non-leveraged fund													
Performance fee	20,00%		Benchmark: MSCI world index 1995-2007, LT return						7,53%				
Leverage: % debt of total capital	0,00%		1,00	0,00	Peer group: MSCI world SC value index 1995-2007						8,24%		
Leverage borrowing rate	4,75%		Peer group 'alphaLT': World SC value - world										0,71%
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth		
2009	-6,00%	-6,00%	1,00		8,24%	1,00				1,00	1,00		
2010	26,00%	26,00%	0,94		8,24%	1,08							
2011	-6,00%	-6,00%	1,18	11,33%	8,24%	1,17	26,81%	0,00%		11,33%			
2012	26,00%	26,00%	1,11		8,24%	1,27			1,00		1,11		
2013	-6,00%	-6,00%	1,40		8,24%	1,37							
2014	26,00%	26,00%	1,32	49,23%	8,24%	1,49	26,81%	4,48%		44,75%			
2015	-6,00%	-6,00%	1,66		8,24%	1,61			1,04		1,61		
2016	26,00%	26,00%	1,56		8,24%	1,74							
2017	-6,00%	-6,00%	1,97	11,33%	8,24%	1,88	26,81%	0,00%		11,33%			
2018	26,00%	26,00%	1,85		8,24%	2,04			1,04		1,79		
2019	-6,00%	-6,00%	2,33		8,24%	2,21							
2020	26,00%	26,00%	2,19	49,23%	8,24%	2,39	26,81%	4,48%		44,75%			
2021	-6,00%	-6,00%	2,76		8,24%	2,59			1,09		2,60		
2022	26,00%	26,00%	2,59		8,24%	2,80							
2023	-6,00%	-6,00%	3,27	11,33%	8,24%	3,03	26,81%	0,00%		11,33%			
2024	26,00%	26,00%	3,07		8,24%	3,28			1,09		2,89		
2025	-6,00%	-6,00%	3,87		8,24%	3,55							
2026	26,00%	26,00%	3,64	49,23%	8,24%	3,84	26,81%	4,48%		44,75%			
2027			4,59			4,16			1,14		4,19		
Mean	10,00%	10,00%	8,83%	10,09%	8,24%	8,24%	8,94%	0,75%	0,73%	9,35%	8,28%		
StDev	16,46%	16,46%		6,92%	0,00%		0,00%	0,82%		6,10%			
Added annual returns = Performance fee return + Investor return								10,09%					
Share of annual return								7,40%		92,60%			
Added annualized LT returns = Performance fee LT return + Investor LT return										9,01%			
Share of annualized LT return										8,14%			
Correlation: Leveraged fund return vs. hurdle rate								0,00		0,00			
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return								0,71%					
Investor 'alpha' = Investor LT return - MSCI world LT return										0,75%			
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return										1,48%			
Fund alpha distribution by absolute share										0,73%			
Fund alpha distribution by relative share										49,52%			
Case 4: Performance fee 3 years evaluation period - Leveraged fund													
Performance fee	20,00%		Benchmark: MSCI world index 1995-2007, LT return						7,53%				
Leverage: % debt of total capital	75,00%		4,00	3,00	Peer group: MSCI world SC value index 1995-2007						8,24%		
Leverage borrowing rate	4,75%		Peer group 'alphaLT': World SC value - world										0,71%
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth		
2009	-6,00%	-38,25%	1,00		8,24%	1,00				1,00	1,00		
2010	26,00%	89,75%	0,62		8,24%	1,08							
2011	-6,00%	-38,25%	1,17	-27,65%	8,24%	1,17	26,81%	0,00%		-27,65%			
2012	26,00%	89,75%	0,72		8,24%	1,27			1,00		0,72		
2013	-6,00%	-38,25%	1,37		8,24%	1,37							
2014	26,00%	89,75%	0,85	122,33%	8,24%	1,49	26,81%	19,10%		103,23%			
2015	-6,00%	-38,25%	1,61		8,24%	1,61			1,19		1,47		
2016	26,00%	89,75%	0,99		8,24%	1,74							
2017	-6,00%	-38,25%	1,88	-27,65%	8,24%	1,88	26,81%	0,00%		-27,65%			
2018	26,00%	89,75%	1,16		8,24%	2,04			1,19		1,06		
2019	-6,00%	-38,25%	2,21		8,24%	2,21							
2020	26,00%	89,75%	1,36	122,33%	8,24%	2,39	26,81%	19,10%		103,23%			
2021	-6,00%	-38,25%	2,59		8,24%	2,59			1,42		2,16		
2022	26,00%	89,75%	1,60		8,24%	2,80							
2023	-6,00%	-38,25%	3,03	-27,65%	8,24%	3,03	26,81%	0,00%		-27,65%			
2024	26,00%	89,75%	1,87		8,24%	3,28			1,42		1,56		
2025	-6,00%	-38,25%	3,55		8,24%	3,55							
2026	26,00%	89,75%	2,19	122,33%	8,24%	3,84	26,81%	19,10%		103,23%			
2027			4,16			4,16			1,69		3,18		
Mean	10,00%	25,75%	8,25%	15,78%	8,24%	8,24%	8,94%	3,18%	2,96%	12,60%	6,64%		
StDev	16,46%	65,86%		27,38%	0,00%		0,00%	3,49%		23,89%			
Added annual returns = Performance fee return + Investor return								15,78%					
Share of annual return								20,18%		79,82%			
Added annualized LT returns = Performance fee LT return + Investor LT return										9,59%			
Share of annualized LT return										30,82%			
Correlation: Leveraged fund return vs. hurdle rate								0,00		0,00			
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return								0,71%					
Investor 'alpha' = Investor LT return - MSCI world LT return										-0,89%			
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return										2,06%			
Fund alpha distribution by absolute share										2,96%			
Fund alpha distribution by relative share										143,30%			

Table V - 0% leverage or 75% when 1 year fees, hurdle rate is alpha neutral, its correlation is 1 and return is 10%

Case 1: Performance fee 1 year evaluation period - Non-leveraged fund													
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return					7,53%				
Leverage: % debt of total capital		0,00%		1,00		0,00		Peer group: MSCI world SC value index 1995-2007		8,24%			
Leverage borrowing rate		4,75%		Peer group 'alphaLT': World SC value - world					0,71%				
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth				
2009	-6,00%	-6,00%	1,00	-2,00%	1,00	0,00%	1,00	-6,00%	1,00				
2010	26,00%	26,00%	0,94	19,55%	0,98	1,29%	1,00	24,71%	0,94				
2011	-6,00%	-6,00%	1,18	-2,00%	1,17	0,00%	1,01	-6,00%	1,17				
2012	26,00%	26,00%	1,11	19,55%	1,15	1,29%	1,01	24,71%	1,10				
2013	-6,00%	-6,00%	1,40	-2,00%	1,37	0,00%	1,03	-6,00%	1,37				
2014	26,00%	26,00%	1,32	19,55%	1,35	1,29%	1,03	24,71%	1,29				
2015	-6,00%	-6,00%	1,66	-2,00%	1,61	0,00%	1,04	-6,00%	1,61				
2016	26,00%	26,00%	1,56	19,55%	1,58	1,29%	1,04	24,71%	1,51				
2017	-6,00%	-6,00%	1,97	-2,00%	1,88	0,00%	1,05	-6,00%	1,89				
2018	26,00%	26,00%	1,85	19,55%	1,85	1,29%	1,05	24,71%	1,78				
2019	-6,00%	-6,00%	2,33	-2,00%	2,21	0,00%	1,07	-6,00%	2,21				
2020	26,00%	26,00%	2,19	19,55%	2,16	1,29%	1,07	24,71%	2,08				
2021	-6,00%	-6,00%	2,76	-2,00%	2,59	0,00%	1,08	-6,00%	2,60				
2022	26,00%	26,00%	2,59	19,55%	2,53	1,29%	1,08	24,71%	2,44				
2023	-6,00%	-6,00%	3,27	-2,00%	3,03	0,00%	1,09	-6,00%	3,04				
2024	26,00%	26,00%	3,07	19,55%	2,97	1,29%	1,09	24,71%	2,86				
2025	-6,00%	-6,00%	3,87	-2,00%	3,55	0,00%	1,11	-6,00%	3,57				
2026	26,00%	26,00%	3,64	19,55%	3,48	1,29%	1,11	24,71%	3,35				
2027			4,59		4,16		1,12		4,18				
Mean	10,00%	10,00%	8,83%	8,78%	8,24%	0,65%	0,64%	9,36%	8,27%				
StDev	16,46%	16,46%		11,09%		0,66%		15,80%					
Added annual returns = Performance fee return + Investor return						10,00%							
Share of annual return						6,45%		93,55%					
Added annualized LT returns = Performance fee LT return + Investor LT return							8,91%						
Share of annualized LT return							7,21%		92,79%				
Correlation: Leveraged fund return vs. hurdle rate				1,00									
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return					0,71%								
Investor 'alpha' = Investor LT return - MSCI world LT return													
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return						0,74%							
Fund alpha distribution by absolute share						0,64%							
Fund alpha distribution by relative share						46,44%							
Fund alpha distribution by absolute share								0,74%					
Fund alpha distribution by relative share								53,56%					
Case 2: Performance fee 1 year evaluation period - Leveraged fund													
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return					7,53%				
Leverage: % debt of total capital		75,00%		4,00		3,00		Peer group: MSCI world SC value index 1995-2007		8,24%			
Leverage borrowing rate		4,75%		Peer group 'alphaLT': World SC value - world					0,71%				
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth				
2009	-6,00%	-38,25%	1,00	-2,00%	1,00	0,00%	1,00	-38,25%	1,00				
2010	26,00%	89,75%	0,62	19,55%	0,98	14,04%	1,00	75,71%	0,62				
2011	-6,00%	-38,25%	1,17	-2,00%	1,17	0,00%	1,14	-38,25%	1,09				
2012	26,00%	89,75%	0,72	19,55%	1,15	14,04%	1,14	75,71%	0,67				
2013	-6,00%	-38,25%	1,37	-2,00%	1,37	0,00%	1,30	-38,25%	1,18				
2014	26,00%	89,75%	0,85	19,55%	1,35	14,04%	1,30	75,71%	0,73				
2015	-6,00%	-38,25%	1,61	-2,00%	1,61	0,00%	1,48	-38,25%	1,28				
2016	26,00%	89,75%	0,99	19,55%	1,58	14,04%	1,48	75,71%	0,79				
2017	-6,00%	-38,25%	1,88	-2,00%	1,88	0,00%	1,69	-38,25%	1,39				
2018	26,00%	89,75%	1,16	19,55%	1,85	14,04%	1,69	75,71%	0,86				
2019	-6,00%	-38,25%	2,21	-2,00%	2,21	0,00%	1,93	-38,25%	1,50				
2020	26,00%	89,75%	1,36	19,55%	2,16	14,04%	1,93	75,71%	0,93				
2021	-6,00%	-38,25%	2,59	-2,00%	2,59	0,00%	2,20	-38,25%	1,63				
2022	26,00%	89,75%	1,60	19,55%	2,53	14,04%	2,20	75,71%	1,01				
2023	-6,00%	-38,25%	3,03	-2,00%	3,03	0,00%	2,51	-38,25%	1,77				
2024	26,00%	89,75%	1,87	19,55%	2,97	14,04%	2,51	75,71%	1,09				
2025	-6,00%	-38,25%	3,55	-2,00%	3,55	0,00%	2,86	-38,25%	1,92				
2026	26,00%	89,75%	2,19	19,55%	3,48	14,04%	2,86	75,71%	1,19				
2027			4,16		4,16		3,26		2,08				
Mean	10,00%	25,75%	8,25%	8,78%	8,24%	7,02%	6,79%	18,73%	4,16%				
StDev	16,46%	65,86%		11,09%		7,22%		58,63%					
Added annual returns = Performance fee return + Investor return						25,75%							
Share of annual return						27,26%		72,74%					
Added annualized LT returns = Performance fee LT return + Investor LT return							10,95%						
Share of annualized LT return							61,99%		38,01%				
Correlation: Leveraged fund return vs. hurdle rate				1,00									
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return					0,71%								
Investor 'alpha' = Investor LT return - MSCI world LT return													
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return						-3,37%							
Fund alpha distribution by absolute share						6,79%							
Fund alpha distribution by relative share						198,33%							
Fund alpha distribution by absolute share						-3,37%							
Fund alpha distribution by relative share						-98,33%							

Table VI - 0% leverage or 75% when 3 years fees, hurdle rate is alpha neutral, its correlation is 1 and return is 10%

Case 3: Performance fee 3 years evaluation period - Non-leveraged fund												
Performance fee	20,00%		Benchmark: MSCI world index 1995-2007, LT return						7,53%			
Leverage: % debt of total capital	0,00%		1,00	0,00	Peer group: MSCI world SC value index 1995-2007				8,24%			
Leverage borrowing rate	4,75%		Peer group 'alphaLT': World SC value - world						0,71%			
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-6,00%	1,00		-2,00%	1,00				1,00		
2010	26,00%	26,00%	0,94		19,55%	0,98						
2011	-6,00%	-6,00%	1,18	11,33%	-2,00%	1,17	14,82%	0,00%		11,33%		
2012	26,00%	26,00%	1,11		19,55%	1,15			1,00		1,11	
2013	-6,00%	-6,00%	1,40		-2,00%	1,37						
2014	26,00%	26,00%	1,32	49,23%	19,55%	1,35	40,06%	1,83%		47,40%		
2015	-6,00%	-6,00%	1,66		-2,00%	1,61			1,02		1,64	
2016	26,00%	26,00%	1,56		19,55%	1,58						
2017	-6,00%	-6,00%	1,97	11,33%	-2,00%	1,88	14,82%	0,00%		11,33%		
2018	26,00%	26,00%	1,85		19,55%	1,85			1,02		1,83	
2019	-6,00%	-6,00%	2,33		-2,00%	2,21						
2020	26,00%	26,00%	2,19	49,23%	19,55%	2,16	40,06%	1,83%		47,40%		
2021	-6,00%	-6,00%	2,76		-2,00%	2,59			1,04		2,69	
2022	26,00%	26,00%	2,59		19,55%	2,53						
2023	-6,00%	-6,00%	3,27	11,33%	-2,00%	3,03	14,82%	0,00%		11,33%		
2024	26,00%	26,00%	3,07		19,55%	2,97			1,04		3,00	
2025	-6,00%	-6,00%	3,87		-2,00%	3,55						
2026	26,00%	26,00%	3,64	49,23%	19,55%	3,48	40,06%	1,83%		47,40%		
2027			4,59			4,16			1,06		4,42	
Mean	10,00%	10,00%	8,83%	10,09%	8,78%	8,24%	9,15%	0,31%	0,30%	9,79%	8,61%	
StDev	16,46%	16,46%	6,92%	6,92%	11,09%		4,61%	0,33%		6,58%		
Added annual returns = Performance fee return + Investor return								10,09%				
Share of annual return								3,03%		96,97%		
Added annualized LT returns = Performance fee LT return + Investor LT return								8,91%				
Share of annualized LT return								3,41%		96,59%		
Correlation: Leveraged fund return vs. hurdle rate					1,00		1,00					
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return					0,71%							
Investor 'alpha' = Investor LT return - MSCI world LT return									1,08%			
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return									1,38%			
Fund alpha distribution by absolute share									0,30%		1,08%	
Fund alpha distribution by relative share									21,99%		78,01%	
Case 4: Performance fee 3 years evaluation period - Leveraged fund												
Performance fee	20,00%		Benchmark: MSCI world index 1995-2007, LT return						7,53%			
Leverage: % debt of total capital	75,00%		4,00	3,00	Peer group: MSCI world SC value index 1995-2007				8,24%			
Leverage borrowing rate	4,75%		Peer group 'alphaLT': World SC value - world						0,71%			
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-38,25%	1,00		-2,00%	1,00				1,00		
2010	26,00%	89,75%	0,62		19,55%	0,98						
2011	-6,00%	-38,25%	1,17	-27,65%	-2,00%	1,17	14,82%	0,00%		-27,65%		
2012	26,00%	89,75%	0,72		19,55%	1,15			1,00		0,72	
2013	-6,00%	-38,25%	1,37		-2,00%	1,37						
2014	26,00%	89,75%	0,85	122,33%	19,55%	1,35	40,06%	16,45%		105,88%		
2015	-6,00%	-38,25%	1,61		-2,00%	1,61			1,16		1,49	
2016	26,00%	89,75%	0,99		19,55%	1,58						
2017	-6,00%	-38,25%	1,88	-27,65%	-2,00%	1,88	14,82%	0,00%		-27,65%		
2018	26,00%	89,75%	1,16		19,55%	1,85			1,16		1,08	
2019	-6,00%	-38,25%	2,21		-2,00%	2,21						
2020	26,00%	89,75%	1,36	122,33%	19,55%	2,16	40,06%	16,45%		105,88%		
2021	-6,00%	-38,25%	2,59		-2,00%	2,59			1,36		2,22	
2022	26,00%	89,75%	1,60		19,55%	2,53						
2023	-6,00%	-38,25%	3,03	-27,65%	-2,00%	3,03	14,82%	0,00%		-27,65%		
2024	26,00%	89,75%	1,87		19,55%	2,97			1,36		1,61	
2025	-6,00%	-38,25%	3,55		-2,00%	3,55						
2026	26,00%	89,75%	2,19	122,33%	19,55%	3,48	40,06%	16,45%		105,88%		
2027			4,16			4,16			1,58		3,31	
Mean	10,00%	25,75%	8,25%	15,78%	8,78%	8,24%	9,15%	2,74%	2,57%	13,04%	6,87%	
StDev	16,46%	65,86%	27,38%	27,38%	11,09%		4,61%	3,00%		24,38%		
Added annual returns = Performance fee return + Investor return								15,78%				
Share of annual return								17,38%		82,62%		
Added annualized LT returns = Performance fee LT return + Investor LT return								9,44%				
Share of annualized LT return								27,24%		72,76%		
Correlation: Leveraged fund return vs. hurdle rate					1,00		1,00					
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return					0,71%							
Investor 'alpha' = Investor LT return - MSCI world LT return									-0,66%			
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return									1,91%			
Fund alpha distribution by absolute share									2,57%		-0,66%	
Fund alpha distribution by relative share									134,74%		-34,74%	

Table VII - 0% leverage or 75% when 1 year fees, hurdle rate is alpha neutral, its correlation is 1 and return is 8%

Case 1: Performance fee 1 year evaluation period - Non-leveraged fund												
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return					7,53%			
Leverage: % debt of total capital		0,00%		1,00		0,00		Peer group: MSCI world SC value index 1995-2007		8,24%		
Leverage borrowing rate		4,75%						Peer group 'alphaLT': World SC value - world		0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth			
2009	-6,00%	-6,00%	1,00	-2,00%	1,00	0,00%	1,00	-6,00%	1,00			
2010	22,00%	22,00%	0,94	19,55%	0,98	0,49%	1,00	21,51%	0,94			
2011	-6,00%	-6,00%	1,15	-2,00%	1,17	0,00%	1,00	-6,00%	1,14			
2012	22,00%	22,00%	1,08	19,55%	1,15	0,49%	1,00	21,51%	1,07			
2013	-6,00%	-6,00%	1,32	-2,00%	1,37	0,00%	1,01	-6,00%	1,30			
2014	22,00%	22,00%	1,24	19,55%	1,35	0,49%	1,01	21,51%	1,23			
2015	-6,00%	-6,00%	1,51	-2,00%	1,61	0,00%	1,01	-6,00%	1,49			
2016	22,00%	22,00%	1,42	19,55%	1,58	0,49%	1,01	21,51%	1,40			
2017	-6,00%	-6,00%	1,73	-2,00%	1,88	0,00%	1,02	-6,00%	1,70			
2018	22,00%	22,00%	1,63	19,55%	1,85	0,49%	1,02	21,51%	1,60			
2019	-6,00%	-6,00%	1,98	-2,00%	2,21	0,00%	1,02	-6,00%	1,94			
2020	22,00%	22,00%	1,86	19,55%	2,16	0,49%	1,02	21,51%	1,83			
2021	-6,00%	-6,00%	2,27	-2,00%	2,59	0,00%	1,03	-6,00%	2,22			
2022	22,00%	22,00%	2,14	19,55%	2,53	0,49%	1,03	21,51%	2,09			
2023	-6,00%	-6,00%	2,61	-2,00%	3,03	0,00%	1,03	-6,00%	2,54			
2024	22,00%	22,00%	2,45	19,55%	2,97	0,49%	1,03	21,51%	2,38			
2025	-6,00%	-6,00%	2,99	-2,00%	3,55	0,00%	1,04	-6,00%	2,90			
2026	22,00%	22,00%	2,81	19,55%	3,48	0,49%	1,04	21,51%	2,72			
2027			3,43		4,16		1,04		3,31			
Mean	8,00%	8,00%	7,09%	8,78%	8,24%	0,25%	0,24%	7,76%	6,87%			
StDev	14,41%	14,41%		11,09%		0,25%		14,15%				
Added annual returns = Performance fee return + Investor return						8,00%						
Share of annual return						3,06%		96,94%				
Added annualized LT returns = Performance fee LT return + Investor LT return							7,12%					
Share of annualized LT return							3,44%		96,56%			
Correlation: Leveraged fund return vs. hurdle rate				1,00								
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return					0,71%							
Investor 'alpha' = Investor LT return - MSCI world LT return										-0,66%		
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											-0,41%	
Fund alpha distribution by absolute share							0,24%				-0,66%	
Fund alpha distribution by relative share							-59,42%				159,42%	
Case 2: Performance fee 1 year evaluation period - Leveraged fund												
Performance fee: % of return over hurdle		20,00%		Benchmark: MSCI world index 1995-2007, LT return					7,53%			
Leverage: % debt of total capital		75,00%		4,00		3,00		Peer group: MSCI world SC value index 1995-2007		8,24%		
Leverage borrowing rate		4,75%						Peer group 'alphaLT': World SC value - world		0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth			
2009	-6,00%	-38,25%	1,00	-2,00%	1,00	0,00%	1,00	-38,25%	1,00			
2010	22,00%	73,75%	0,62	19,55%	0,98	10,84%	1,00	62,91%	0,62			
2011	-6,00%	-38,25%	1,07	-2,00%	1,17	0,00%	1,11	-38,25%	1,01			
2012	22,00%	73,75%	0,66	19,55%	1,15	10,84%	1,11	62,91%	0,62			
2013	-6,00%	-38,25%	1,15	-2,00%	1,37	0,00%	1,23	-38,25%	1,01			
2014	22,00%	73,75%	0,71	19,55%	1,35	10,84%	1,23	62,91%	0,62			
2015	-6,00%	-38,25%	1,24	-2,00%	1,61	0,00%	1,36	-38,25%	1,02			
2016	22,00%	73,75%	0,76	19,55%	1,58	10,84%	1,36	62,91%	0,63			
2017	-6,00%	-38,25%	1,33	-2,00%	1,88	0,00%	1,51	-38,25%	1,02			
2018	22,00%	73,75%	0,82	19,55%	1,85	10,84%	1,51	62,91%	0,63			
2019	-6,00%	-38,25%	1,42	-2,00%	2,21	0,00%	1,67	-38,25%	1,03			
2020	22,00%	73,75%	0,88	19,55%	2,16	10,84%	1,67	62,91%	0,64			
2021	-6,00%	-38,25%	1,53	-2,00%	2,59	0,00%	1,85	-38,25%	1,04			
2022	22,00%	73,75%	0,94	19,55%	2,53	10,84%	1,85	62,91%	0,64			
2023	-6,00%	-38,25%	1,64	-2,00%	3,03	0,00%	2,06	-38,25%	1,04			
2024	22,00%	73,75%	1,01	19,55%	2,97	10,84%	2,06	62,91%	0,64			
2025	-6,00%	-38,25%	1,76	-2,00%	3,55	0,00%	2,28	-38,25%	1,05			
2026	22,00%	73,75%	1,08	19,55%	3,48	10,84%	2,28	62,91%	0,65			
2027			1,88		4,16		2,53		1,06			
Mean	8,00%	17,75%	3,58%	8,78%	8,24%	5,42%	5,28%	12,33%	0,30%			
StDev	14,41%	57,62%		11,09%		5,58%		52,05%				
Added annual returns = Performance fee return + Investor return						17,75%						
Share of annual return						30,54%		69,46%				
Added annualized LT returns = Performance fee LT return + Investor LT return							5,58%					
Share of annualized LT return							94,66%		5,34%			
Correlation: Leveraged fund return vs. hurdle rate				1,00								
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return					0,71%							
Investor 'alpha' = Investor LT return - MSCI world LT return										-7,23%		
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											-1,95%	
Fund alpha distribution by absolute share							5,28%				-7,23%	
Fund alpha distribution by relative share							-270,60%				370,60%	

Table VIII - 0% leverage or 75% when 3 years fees, hurdle rate is alpha neutral, its correlation is 1 and return is 8%

Case 3: Performance fee 3 years evaluation period - Non-leveraged fund												
Performance fee	20,00%		1,00		Benchmark: MSCI world index 1995-2007, LT return					7,53%		
Leverage: % debt of total capital	0,00%		0,00		Peer group: MSCI world SC value index 1995-2007					8,24%		
Leverage borrowing rate	4,75%				Peer group 'alphaLT': World SC value - world					0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-6,00%	1,00		-2,00%	1,00				1,00	1,00	
2010	22,00%	22,00%	0,94		19,55%	0,98						
2011	-6,00%	-6,00%	1,15	7,80%	-2,00%	1,17	14,82%	0,00%		7,80%		
2012	22,00%	22,00%	1,08		19,55%	1,15			1,00		1,08	
2013	-6,00%	-6,00%	1,32		-2,00%	1,37						
2014	22,00%	22,00%	1,24	39,91%	19,55%	1,35	40,06%	0,00%		39,91%		
2015	-6,00%	-6,00%	1,51		-2,00%	1,61			1,00		1,51	
2016	22,00%	22,00%	1,42		19,55%	1,58						
2017	-6,00%	-6,00%	1,73	7,80%	-2,00%	1,88	14,82%	0,00%		7,80%		
2018	22,00%	22,00%	1,63		19,55%	1,85			1,00		1,63	
2019	-6,00%	-6,00%	1,98		-2,00%	2,21						
2020	22,00%	22,00%	1,86	39,91%	19,55%	2,16	40,06%	0,00%		39,91%		
2021	-6,00%	-6,00%	2,27		-2,00%	2,59			1,00		2,27	
2022	22,00%	22,00%	2,14		19,55%	2,53						
2023	-6,00%	-6,00%	2,61	7,80%	-2,00%	3,03	14,82%	0,00%		7,80%		
2024	22,00%	22,00%	2,45		19,55%	2,97			1,00		2,45	
2025	-6,00%	-6,00%	2,99		-2,00%	3,55						
2026	22,00%	22,00%	2,81	39,91%	19,55%	3,48	40,06%	0,00%		39,91%		
2027			3,43			4,16			1,00		3,43	
Mean	8,00%	8,00%	7,09%	7,95%	8,78%	8,24%	9,15%	0,00%	0,00%	7,95%	7,09%	
StDev	14,41%	14,41%	5,86%	5,86%	11,09%		4,61%	0,00%		5,86%		
Added annual returns = Performance fee return + Investor return								7,95%				
Share of annual return								0,00%	100,00%			
Added annualized LT returns = Performance fee LT return + Investor LT return									7,09%			
Share of annualized LT return									0,00%	100,00%		
Correlation: Leveraged fund return vs. hurdle rate					1,00		1,00					
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return						0,71%						
Investor 'alpha' = Investor LT return - MSCI world LT return											-0,44%	
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											-0,44%	
Fund alpha distribution by absolute share								0,00%				-0,44%
Fund alpha distribution by relative share								0,00%				100,00%
Case 4: Performance fee 3 years evaluation period - Leveraged fund												
Performance fee	20,00%		4,00		Benchmark: MSCI world index 1995-2007, LT return					7,53%		
Leverage: % debt of total capital	75,00%		3,00		Peer group: MSCI world SC value index 1995-2007					8,24%		
Leverage borrowing rate	4,75%				Peer group 'alphaLT': World SC value - world					0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-38,25%	1,00		-2,00%	1,00				1,00	1,00	
2010	22,00%	73,75%	0,62		19,55%	0,98						
2011	-6,00%	-38,25%	1,07	-33,75%	-2,00%	1,17	14,82%	0,00%		-33,75%		
2012	22,00%	73,75%	0,66		19,55%	1,15			1,00		0,66	
2013	-6,00%	-38,25%	1,15		-2,00%	1,37						
2014	22,00%	73,75%	0,71	86,42%	19,55%	1,35	40,06%	9,27%		77,15%		
2015	-6,00%	-38,25%	1,24		-2,00%	1,61			1,09		1,17	
2016	22,00%	73,75%	0,76		19,55%	1,58						
2017	-6,00%	-38,25%	1,33	-33,75%	-2,00%	1,88	14,82%	0,00%		-33,75%		
2018	22,00%	73,75%	0,82		19,55%	1,85			1,09		0,78	
2019	-6,00%	-38,25%	1,42		-2,00%	2,21						
2020	22,00%	73,75%	0,88	86,42%	19,55%	2,16	40,06%	9,27%		77,15%		
2021	-6,00%	-38,25%	1,53		-2,00%	2,59			1,19		1,38	
2022	22,00%	73,75%	0,94		19,55%	2,53						
2023	-6,00%	-38,25%	1,64	-33,75%	-2,00%	3,03	14,82%	0,00%		-33,75%		
2024	22,00%	73,75%	1,01		19,55%	2,97			1,19		0,91	
2025	-6,00%	-38,25%	1,76		-2,00%	3,55						
2026	22,00%	73,75%	1,08	86,42%	19,55%	3,48	40,06%	9,27%		77,15%		
2027			1,88			4,16			1,30		1,62	
Mean	8,00%	17,75%	3,58%	8,78%	8,78%	8,24%	9,15%	1,55%	1,49%	7,23%	2,70%	
StDev	14,41%	57,62%	21,94%	21,94%	11,09%		4,61%	1,69%		20,25%		
Added annual returns = Performance fee return + Investor return								8,78%				
Share of annual return								17,60%	82,40%			
Added annualized LT returns = Performance fee LT return + Investor LT return									4,19%			
Share of annualized LT return									35,50%	64,50%		
Correlation: Leveraged fund return vs. hurdle rate					1,00		1,00					
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return						0,71%						
Investor 'alpha' = Investor LT return - MSCI world LT return											-4,83%	
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return											-3,34%	
Fund alpha distribution by absolute share								1,49%				-4,83%
Fund alpha distribution by relative share								-44,61%				144,61%

Table IX - 0% leverage or 75% when 1 year fees, hurdle rate is alpha neutral, its correlation is 1 and return is 12%

Case 1: Performance fee 1 year evaluation period - Non-leveraged fund												
Performance fee: % of return over hurdle			20,00%		Benchmark: MSCI world index 1995-2007, LT return			7,53%				
Leverage: % debt of total capital			0,00%		Peer group: MSCI world SC value index 1995-2007			8,24%				
Leverage borrowing rate			4,75%		Peer group 'alphaLT': World SC value - world			0,71%				
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth			
2009	-6,00%	-6,00%	1,00	-2,00%	1,00	0,00%	1,00	-6,00%	1,00			
2010	30,00%	30,00%	0,94	19,55%	0,98	2,09%	1,00	27,91%	0,94			
2011	-6,00%	-6,00%	1,22	-2,00%	1,17	0,00%	1,02	-6,00%	1,20			
2012	30,00%	30,00%	1,15	19,55%	1,15	2,09%	1,02	27,91%	1,13			
2013	-6,00%	-6,00%	1,49	-2,00%	1,37	0,00%	1,04	-6,00%	1,45			
2014	30,00%	30,00%	1,40	19,55%	1,35	2,09%	1,04	27,91%	1,36			
2015	-6,00%	-6,00%	1,82	-2,00%	1,61	0,00%	1,06	-6,00%	1,74			
2016	30,00%	30,00%	1,72	19,55%	1,58	2,09%	1,06	27,91%	1,63			
2017	-6,00%	-6,00%	2,23	-2,00%	1,88	0,00%	1,09	-6,00%	2,09			
2018	30,00%	30,00%	2,10	19,55%	1,85	2,09%	1,09	27,91%	1,96			
2019	-6,00%	-6,00%	2,72	-2,00%	2,21	0,00%	1,11	-6,00%	2,51			
2020	30,00%	30,00%	2,56	19,55%	2,16	2,09%	1,11	27,91%	2,36			
2021	-6,00%	-6,00%	3,33	-2,00%	2,59	0,00%	1,13	-6,00%	3,02			
2022	30,00%	30,00%	3,13	19,55%	2,53	2,09%	1,13	27,91%	2,84			
2023	-6,00%	-6,00%	4,07	-2,00%	3,03	0,00%	1,16	-6,00%	3,63			
2024	30,00%	30,00%	3,82	19,55%	2,97	2,09%	1,16	27,91%	3,41			
2025	-6,00%	-6,00%	4,97	-2,00%	3,55	0,00%	1,18	-6,00%	4,37			
2026	30,00%	30,00%	4,67	19,55%	3,48	2,09%	1,18	27,91%	4,11			
2027			6,08		4,16		1,20		5,25			
Mean	12,00%	12,00%	10,54%	8,78%	8,24%	1,05%	1,04%	10,96%	9,65%			
StDev	18,52%	18,52%	11,09%			1,08%		17,45%				
Added annual returns = Performance fee return + Investor return						12,00%		17,45%				
Share of annual return						8,71%		91,29%				
Added annualized LT returns = Performance fee LT return + Investor LT return								10,69%				
Share of annualized LT return								9,72%		90,28%		
Correlation: Leveraged fund return vs. hurdle rate						1,00						
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return						0,71%						
Investor 'alpha' = Investor LT return - MSCI world LT return								2,12%				
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return								3,16%				
Fund alpha distribution by absolute share								1,04%		2,12%		
Fund alpha distribution by relative share								32,88%		67,12%		
Case 2: Performance fee 1 year evaluation period - Leveraged fund												
Performance fee: % of return over hurdle			20,00%		Benchmark: MSCI world index 1995-2007, LT return			7,53%				
Leverage: % debt of total capital			75,00%		Peer group: MSCI world SC value index 1995-2007			8,24%				
Leverage borrowing rate			4,75%		Peer group 'alphaLT': World SC value - world			0,71%				
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Hurdle rate	Hurdle rate index growth	Performance fee 1 year paid ultimo	Performance fee index growth	Investor return	Investor return index growth			
2009	-6,00%	-38,25%	1,00	-2,00%	1,00	0,00%	1,00	-38,25%	1,00			
2010	30,00%	105,75%	0,62	19,55%	0,98	17,24%	1,00	88,51%	0,62			
2011	-6,00%	-38,25%	1,27	-2,00%	1,17	0,00%	1,17	-38,25%	1,16			
2012	30,00%	105,75%	0,78	19,55%	1,15	17,24%	1,17	88,51%	0,72			
2013	-6,00%	-38,25%	1,61	-2,00%	1,37	0,00%	1,37	-38,25%	1,36			
2014	30,00%	105,75%	1,00	19,55%	1,35	17,24%	1,37	88,51%	0,84			
2015	-6,00%	-38,25%	2,05	-2,00%	1,61	0,00%	1,61	-38,25%	1,58			
2016	30,00%	105,75%	1,27	19,55%	1,58	17,24%	1,61	88,51%	0,97			
2017	-6,00%	-38,25%	2,61	-2,00%	1,88	0,00%	1,89	-38,25%	1,84			
2018	30,00%	105,75%	1,61	19,55%	1,85	17,24%	1,89	88,51%	1,13			
2019	-6,00%	-38,25%	3,31	-2,00%	2,21	0,00%	2,22	-38,25%	2,14			
2020	30,00%	105,75%	2,04	19,55%	2,16	17,24%	2,22	88,51%	1,32			
2021	-6,00%	-38,25%	4,21	-2,00%	2,59	0,00%	2,60	-38,25%	2,49			
2022	30,00%	105,75%	2,60	19,55%	2,53	17,24%	2,60	88,51%	1,54			
2023	-6,00%	-38,25%	5,34	-2,00%	3,03	0,00%	3,04	-38,25%	2,90			
2024	30,00%	105,75%	3,30	19,55%	2,97	17,24%	3,04	88,51%	1,79			
2025	-6,00%	-38,25%	6,79	-2,00%	3,55	0,00%	3,57	-38,25%	3,37			
2026	30,00%	105,75%	4,19	19,55%	3,48	17,24%	3,57	88,51%	2,08			
2027			8,63		4,16		4,18		3,92			
Mean	12,00%	33,75%	12,72%	8,78%	8,24%	8,62%	8,28%	25,13%	7,89%			
StDev	18,52%	74,09%	11,09%			8,87%		65,22%				
Added annual returns = Performance fee return + Investor return						33,75%		65,22%				
Share of annual return						25,54%		74,46%				
Added annualized LT returns = Performance fee LT return + Investor LT return								16,17%				
Share of annualized LT return								51,19%		48,81%		
Correlation: Leveraged fund return vs. hurdle rate						1,00						
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return						0,71%						
Investor 'alpha' = Investor LT return - MSCI world LT return								0,36%				
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return								8,64%				
Fund alpha distribution by absolute share								8,28%		0,36%		
Fund alpha distribution by relative share								95,82%		4,18%		

Table X - 0% leverage or 75% when 3 years fees, hurdle rate is alpha neutral, its correlation is 1 and return is 12%

Case 3: Performance fee 3 years evaluation period - Non-leveraged fund												
Performance fee	20,00%				Benchmark: MSCI world index 1995-2007, LT return					7,53%		
Leverage: % debt of total capital	0,00%		1,00		Peer group: MSCI world SC value index 1995-2007					8,24%		
Leverage borrowing rate	4,75%				Peer group 'alphaLT': World SC value - world					0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-6,00%	1,00		-2,00%	1,00				1,00		
2010	30,00%	30,00%	0,94		19,55%	0,98						
2011	-6,00%	-6,00%	1,22	14,87%	-2,00%	1,17	14,82%	0,01%		14,86%		
2012	30,00%	30,00%	1,15		19,55%	1,15			1,00		1,15	
2013	-6,00%	-6,00%	1,49		-2,00%	1,37						
2014	30,00%	30,00%	1,40	58,86%	19,55%	1,35	40,06%	3,76%		55,10%		
2015	-6,00%	-6,00%	1,82		-2,00%	1,61			1,04		1,78	
2016	30,00%	30,00%	1,72		19,55%	1,58						
2017	-6,00%	-6,00%	2,23	14,87%	-2,00%	1,88	14,82%	0,01%		14,86%		
2018	30,00%	30,00%	2,10		19,55%	1,85			1,04		2,05	
2019	-6,00%	-6,00%	2,72		-2,00%	2,21						
2020	30,00%	30,00%	2,56	58,86%	19,55%	2,16	40,06%	3,76%		55,10%		
2021	-6,00%	-6,00%	3,33		-2,00%	2,59			1,08		3,17	
2022	30,00%	30,00%	3,13		19,55%	2,53						
2023	-6,00%	-6,00%	4,07	14,87%	-2,00%	3,03	14,82%	0,01%		14,86%		
2024	30,00%	30,00%	3,82		19,55%	2,97			1,08		3,65	
2025	-6,00%	-6,00%	4,97		-2,00%	3,55						
2026	30,00%	30,00%	4,67	58,86%	19,55%	3,48	40,06%	3,76%		55,10%		
2027			6,08			4,16			1,12		5,65	
Mean	12,00%	12,00%	10,54%	12,29%	8,78%	8,24%	9,15%	0,63%	0,62%	11,66%	10,10%	
StDev	18,52%	18,52%	8,03%	8,03%	11,09%		4,61%	0,68%		7,35%		
Added annual returns = Performance fee return + Investor return								12,29%				
Share of annual return								5,11%	94,89%			
Added annualized LT returns = Performance fee LT return + Investor LT return									10,72%			
Share of annualized LT return									5,77%			
Correlation: Leveraged fund return vs. hurdle rate								1,00	1,00			
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return								0,71%				
Investor 'alpha' = Investor LT return - MSCI world LT return									2,57%			
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return									3,19%			
Fund alpha distribution by absolute share									0,62%			
Fund alpha distribution by relative share									19,39%			
Case 4: Performance fee 3 years evaluation period - Leveraged fund												
Performance fee	20,00%				Benchmark: MSCI world index 1995-2007, LT return					7,53%		
Leverage: % debt of total capital	75,00%		4,00		Peer group: MSCI world SC value index 1995-2007					8,24%		
Leverage borrowing rate	4,75%				Peer group 'alphaLT': World SC value - world					0,71%		
Year	Original fund return	Leveraged fund return	Lev fund return index growth	Lev fund return 3yr	Hurdle rate	Hurdle rate index growth	Hurdle rate 3yr	Perf. fee 3yr paid ult	Perf. fee index growth	Investor return 3yr	Inv return index growth	
2009	-6,00%	-38,25%	1,00		-2,00%	1,00				1,00	1,00	
2010	30,00%	105,75%	0,62		19,55%	0,98						
2011	-6,00%	-38,25%	1,27	-21,55%	-2,00%	1,17	14,82%	0,00%		-21,55%		
2012	30,00%	105,75%	0,78		19,55%	1,15			1,00		0,78	
2013	-6,00%	-38,25%	1,61		-2,00%	1,37						
2014	30,00%	105,75%	1,00	161,41%	19,55%	1,35	40,06%	24,27%		137,14%		
2015	-6,00%	-38,25%	2,05		-2,00%	1,61			1,24		1,86	
2016	30,00%	105,75%	1,27		19,55%	1,58						
2017	-6,00%	-38,25%	2,61	-21,55%	-2,00%	1,88	14,82%	0,00%		-21,55%		
2018	30,00%	105,75%	1,61		19,55%	1,85			1,24		1,46	
2019	-6,00%	-38,25%	3,31		-2,00%	2,21						
2020	30,00%	105,75%	2,04	161,41%	19,55%	2,16	40,06%	24,27%		137,14%		
2021	-6,00%	-38,25%	4,21		-2,00%	2,59			1,54		3,46	
2022	30,00%	105,75%	2,60		19,55%	2,53						
2023	-6,00%	-38,25%	5,34	-21,55%	-2,00%	3,03	14,82%	0,00%		-21,55%		
2024	30,00%	105,75%	3,30		19,55%	2,97			1,54		2,72	
2025	-6,00%	-38,25%	6,79		-2,00%	3,55						
2026	30,00%	105,75%	4,19	161,41%	19,55%	3,48	40,06%	24,27%		137,14%		
2027			8,63			4,16			1,92		6,44	
Mean	12,00%	33,75%	12,72%	23,31%	8,78%	8,24%	9,15%	4,04%	3,69%	19,27%	10,90%	
StDev	18,52%	74,09%	33,40%	33,40%	11,09%		4,61%	4,43%		28,97%		
Added annual returns = Performance fee return + Investor return								23,31%				
Share of annual return								17,35%	82,65%			
Added annualized LT returns = Performance fee LT return + Investor LT return									14,59%			
Share of annualized LT return									25,28%			
Correlation: Leveraged fund return vs. hurdle rate								1,00	1,00			
Hurdle rate 'alpha' = Hurdle rate LT - MSCI world LT return								0,71%				
Investor 'alpha' = Investor LT return - MSCI world LT return									3,37%			
Fund 'alpha' = Perf. fee LT return + Investor LT return - MSCI world LT return									7,06%			
Fund alpha distribution by absolute share									3,69%			
Fund alpha distribution by relative share									52,24%			

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