# Preferences for Short-Term Versus Long-Term Bonuses for Stock Investments

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# Preferences for Short-Term Versus Long-Term Bonuses for Stock Investments

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Abstract

Performance-related bonuses in the finance sector are considered important tools to provide incentives. An example is that stock portfolio managers are awarded bonuses conditionally on their portfolios producing superior returns either relative to an index or equivalent funds. Concerns are however expressed that bonuses to portfolio managers are based on too short time intervals, which may impact negatively on the degree to which environmental and social factors are taken into account in investment decisions. The question addressed in this article is how bonus schemes can be designed so that delayed payouts will be equally motivating as short-term payouts. We have conducted two experiments to investigate preference for bonus payments that are paid out either frequently of infrequently. In Experiment 1 employing 27 undergraduates, preferences were measured for one certain long-term bonus versus four certain bonuses evenly distributed across time. A majority chose the short-term bonuses, and in order for a long-term bonus to be equally preferred the results showed that it needs to be approximately 40 percent higher than the four combined short-term bonuses. Experiment 2 employing another 36 undergraduates introduced uncertainty of outcomes which more accurately reflects the setting faced by stock investors. A four-year bonus is compared to four one-year bonuses. Uncertainty was the same, decreasing or increasing over the four years. The results showed that decreasing uncertainty made a majority prefer the four-year bonus to the added one-year bonuses. In conclusion, introducing uncertainty in choices concerning future outcomes is shown to reduce the extent to which future bonus outcomes are discounted relative to immediate bonus outcomes.

Key words: Portfolio management, performance-related bonus, time discounting

Performance-related bonuses in the finance sector are considered important tools to provide incentives (Golec, 1988). An example is that stock portfolio managers are awarded bonuses conditionally on their portfolios producing superior returns either relative to an index or equivalent funds (Hedesström, 2010). The bonuses paid out are often based on annual portfolio performance, although quarterly evaluation is also common (Unzicker, 2008). Concerns are expressed that bonuses to stock portfolio managers are based on too short time intervals (O'Barr, Conley, & Bruncato, 1992). Even if the time horizon for the fund's investments is long-term, portfolio managers may be pushed towards shorter-term goals since these are the basis on which their bonuses are calculated.

One possible implication of "short-termism" is that environmental and social factors are not taken into account in the investment decisions. It is a relatively widespread view among fund management organisations that good environmental and social performance has positive effects on companies' long-term, albeit not on their short-term, financial performance (Jansson & Biel, 2010). This view is consistent with empirical studies showing a time lag between initiation of efforts to reduce emissions by companies and the realisation of "bottom line" benefits such as increased profitability (Guenster et al., 2005; Hart & Ahuja, 1996). However, if the benefits of superior environmental and social practices are believed not to positively affect short-term returns, stock portfolio managers who are incentivised for their short-term performance would be unlikely to take extra-financial information into account in their investment decisions.

From a sustainable and socially responsible investment perspective (Sparkes, 2005), the above thus speaks in favour of introducing longer time intervals for evaluation of stock portfolio managers. In fact, calls for longer performance review periods have been raised for a long time. For instance, Hopkinson (1990) proposed intervals of three or four years. Recently, former US vice president Al Gore suggested that portfolio managers' bonus payments should be based on a minimum of three years' performance, a practice applied in the sustainability fund that he himself promotes. However, on the whole the finance sector has been slow to respond to such calls. Furthermore, little empirical research has investigated the effects of prolonged evaluation periods and alternative incentive systems on investment decisions. One exception is Baker (1998) who found tentative evidence that the holding period of shares (proxy for short-termism) by UK portfolio managers decreases with the frequency of performance monitoring. Possibly, this implies that conversely longer monitoring intervals make portfolio managers more inclined to view stocks' value development in a longer time perspective and hence less susceptible to adjust trades to short-term price fluctuations. In other words, the portfolio managers may become less myopic

(Benartzi & Thaler, 1995). An alternative interpretation is that long-term incentives are simply not as motivating as short-term incentives, in which case long-term incentives make portfolio managers less inclined to put effort into finding investment opportunities and trade in order to try to beat their index. Since the main rationale for offering bonuses is that it will increase employees' motivation to produce good results (Golec, 1988), the motivating properties of long-term incentives is in need of further empirical study. How can bonus schemes be designed so that delayed payouts will be as motivating as short-term payouts? This is the research question raised in this article.

Previous psychological research sheds some indirect light on the issue. A vast body of experimental studies in psychology addressing time discounting have investigated how people weight delayed outcomes relative to immediate outcomes. The general conclusion from this research is that people generally exhibit positive time discounting, that is that they prefer to reap immediate benefits rather than to wait for them. However, as established in a thorough review by Frederick, Loewenstein, and O'Donoghue (2002), the rate with which future outcomes are discounted varies to an extraordinary extent across studies. It is hence concluded that time discounting is largely context-dependent.

In this article we will investigate time discounting in a previously unresearched context. In contrast to previous psychological research on time discounting, where participants generally are given a choice between an outcome close in time (often immediate) and a comparable delayed outcome in the future, we give our participants the choice between either receiving several short-term bonuses spread out over a specified time period or a single long-term bonus at the end of the same time period. In other words, our experimental paradigm is designed to shed light on the motivating properties of different incentive systems, exploring whether an amount paid out at the end of a specified employment period (e.g., four years) is equally preferred as the same amount distributed over time in smaller portions (e.g., at the end of each of the four years).

Enhanced insights into the motivating properties of long-term bonus payments will be valuable to fund management companies that are considering changes to their incentive systems in order to encourage portfolio managers to provide superior long-term performance instead of narrowly focus on short-term targets. The next sections describe how we go about investigating this.

## Experiment 1

In this experiment we ask participants to imagine that they are offered employment contracts as stock portfolio managers. Their task is to choose between two types of contracts, giving them either four short-term bonuses spread out over a specified time period or one long-term bonus at

the end of this time period. They are also asked to state how large the long-term bonus would need to be in order to be equally desirable as the added short-term bonuses. We investigate this for three specified lengths of employment, where choices are between receiving one one-year bonus vs. four quarterly bonuses, one two-year bonus vs. four half-yearly bonuses, or one four-year bonus vs. four annual bonuses.

Psychological research shows that people generally prefer benefits sooner rather than later (Frederick et al., 2002). Based on this research, we formulate Hypothesis 1a as follows: Four short-term bonuses spread out over a specified time period will be preferred to a single long-term bonus at the end of that time period, given that the sum of the added short-term bonuses equals the long-term bonus. According to the same logic, Hypothesis 1b posits that the long-term bonus payout needs to be larger than the added short-term bonus payouts in order to be equally desirable. Since people generally place inflated weights on proximal events, Hypothesis 1c states that preference for the added short-term bonuses will be potentiated when the first short-term bonus payment is large, and attenuated when the first short-term bonus payment is small. Consistent with this, Hypothesis 1d states that in order to make the added short-term and the long-term bonuses equally desirable, a larger increase of the long-term bonus payout is needed in the former than in the latter case.

Hypothesis 1e posits that preference for the added short-term bonuses will be stronger the longer the time interval (four years vs. two years vs. one year), and consistent with this, Hypothesis 1f states that the larger the long-term bonus needs to be in order to be equally desirable as the added short-term bonuses.

Method

*Participants.* The participants were 27 undergraduates (16 women) at the University of Gothenburg, Göteborg, Sweden, enrolled in different study programs. They were recruited through sign-up sheets and electronic mails. Their mean age was 28.2 years (*SD* = 11.0).

*Design*. A 3 (time span: 1 year vs. 2 years vs. 4 years) by 3 (portfolio value: increasing trend vs. decreasing trend vs. no trend) within-groups experimental design was used.

*Procedure*. Participants were appointed via electronic mail to come to the laboratory. Upon arrival they were seated in separate cubicles and given a booklet to fill out at their own pace. An experimenter was present to supervise them. The task was completed in approximately 30 minutes.

The participants were informed that they would answer questions regarding employment at three fund management companies offering contracts with different time spans (company A one year, company B two years, and company C four years). They were asked to imagine that in each

of these companies, they were responsible for the management of three stock portfolios. Each participant thus answered questions with respect to nine different stock portfolios. A latin square was used to counterbalance the order in which the fund management companies were presented, and another latin square was used to counterbalance the order in which the stock portfolios were presented.

The participants were told that in each employment their payment would include a fixed (unspecified) monthly wage as well as bonuses based on the future value of the stock portfolios. Their task was for each portfolio (1) to indicate whether they preferred four short-term bonuses (quarterly, half-yearly, or annual) or one long-term bonus (after one year, two years, or four years) and (2) to indicate how large the long-term bonus should be (in Swedish Crowns or SEK[1]) in order to be equally desirable as the added short-term bonuses.

For each stock portfolio (presented in the booklet on a separate page) the four short-term bonuses and the single long-term bonus to be paid out were specified in SEK. In addition a graph showed the expected future value development of the portfolio for the specified time span (one, two, or four years). The purpose of the graph was only to make transparent how the bonuses were associated with the value development of the stock portfolio.

The expected portfolio values upon which the short-term bonuses were based (i.e., the last portfolio value of each quarter, half year, or year) were systematically varied, for each fund management company, across the three portfolios in terms of trend: either an increasing trend (7.5, 10.0, 12.5, and 10.0 million SEK); a decreasing trend (12.5, 10.0, 7.5, and 10.0 million SEK); or no trend (all 10.0 million SEK). Trend thus refers to the first three out of the four bonus-generating portfolio values. The last short-term bonus to be paid out as well as the long-term bonus was always based on the same portfolio value (10.0 million SEK). The interspersed portfolio values (upon which the bonuses were not based) were generated by random sampling from normal distributions.

The participants were told that the short-term bonuses amounted to 0.5% of the portfolio value at the end of each quarter, half year, or year, and that the long-term bonus amounted to 2% of the portfolio value at the end of the one-year, two-year, or four-year period. The dashed line in Figure 1 illustrates the bonus payouts for no trend in the four-year condition.

The participants were finally debriefed and paid 50 SEK (approximately 7.5 US$).

*Results and Discussion*

[1]At the time of the study 1 SEK was approximately worth US $ 0.15.

Confirming Hypothesis 1a, which posited that the short-term bonuses would be preferred to the long-term bonus, the former were chosen in 80.7% of the cases. Fourteen participants chose the short-term bonuses over the long-term bonus in all nine choices, whereas two never chose the short-term bonuses. Since there were only marginal differences due to portfolio value trend, choices were aggregated across this factor. Means for the three different time spans are given in Table 1. A one-way repeated-measures (time span: 1 year vs. 2 years vs. 4 years) analysis of variance (ANOVA) yielded a significant effect of time span, $F$ (2,52) = 4.06, $p$ = .023, $\omega^2_{partial}$ = .03. Consistent with Hypothesis 1e preference for the short-term bonuses over the long-term bonus was larger in the 4-year than in the 2-year employment contract condition and larger in the 2-year than in the 1-year employment contract condition.

The participants also indicated how large the long-term bonus would need to be (in SEK) in order to be equally desirable as the added short-term bonuses. In accordance with Hypothesis 1b, the results showed that the former always needed to be larger than the latter. Table 2 indicates how much larger in percentage the long-term bonus needed to be on average for those participants (n = 14) who always chose the short-term bonuses. This percentage measure was subjected to an ANOVA which revealed a significant effect of time span, $F$(2,26) = 8.96, $p$ = .001, $\omega^2_{partial}$ = .06. Consistent with Hypothesis 1f, to be equally desirable as the short-term bonuses a larger increase of the long-term bonus was required when the time horizon was four years than when it was two years and a larger increase when it was two years than when it was one year. Refuting Hypotheses 1c and 1d, portfolio trend did however neither notably affect choice of short-term bonuses vs. long-term bonus nor the percentage indifference measure. Hence, contrary to our expectations, receiving only a relatively small initial shorter-term bonus payment did not diminish participants' preference for short-term over long-term bonuses. Assuming that people's preference for short-term over long-term bonuses is due to time discounting (people generally wanting rewards sooner rather than later, Frederick et al., 2002), our experimental manipulation was possibly not sufficiently strong. In this experiment choosing the short-term bonuses always meant – even when the first bonus payment was relatively small – receiving rewards sooner than when choosing the long-term bonus. In any case, the result is interesting insofar that it indicates that people are not as short-sighted as to focus solely on the most immediate reward.

Preference for the short-term bonuses may arise from yet another source, apart from time discounting. People have been shown under certain conditions to prefer to have rewards spread out over time rather than presented all at the same time (Loewenstein & Prelec, 1993). It is however not vital for resolving our research question to distinguish which of these two sources plays the most prominent role for individual's preference for short-term over long-term bonuses.

What is more important is to disentangle how uncertainty may affect such preferences. This is what we attempt to do in the next experiment.

## Experiment 2

In Experiment 1 participants chose between short-term and long-term bonuses that would be paid out with certainty in the future. Such is however not the case in fund management companies where sizes of future bonuses are, on the contrary, to a great extent uncertain. Psychological research has shown that time discounting of uncertain outcomes is less steep than that of certain outcomes. For instance, Keren and Roelofsma (1995) found that a small, immediate outcome was preferred to a large delayed outcome when the outcomes were certain but not when the outcomes were uncertain. In Experiment 2 we therefore modify the experimental paradigm in order to incorporate uncertainty in the bonus outcomes. We focus solely on the four-year time span, which is the most relevant one for our research question.

We introduce uncertainty as intervals between best-case and worst-case outcomes of the stock portfolios' value developments, resulting in corresponding best-case and worst-case bonus outcomes. Apart from one condition with equal amount of uncertainty across all of the four years (resulting in equal uncertainty for the size of the added short-term bonuses and the size of the long-term bonus), we furthermore include conditions in which uncertainty increases or decreases over the four-year period resulting in larger or smaller uncertainty of the long-term bonus size relative to the added short-term bonus size.

Drawing on the findings of Keren and Roelofsma (1995) we formulate Hypothesis 2a as follows: Introducing equal uncertainty between the short-term and long-term bonus payouts will result in less inflated preferences for the short-term bonuses than was the case in Experiment 1. Hypothesis 2b posits that in conditions where the short-term bonuses are associated with more uncertainty than the long-term bonus, this tendency will be potentiated. Conversely, Hypothesis 2c states that in conditions where the long-term bonus is associated with more uncertainty than the short-term bonuses, preferences for short-term bonuses will be even more pronounced than in Experiment 1.

Hypothesis 2d posits (following the logic of Hypothesis 2a) that a smaller increase of the long-term bonus is required in Experiment 2 than in Experiment 1 in order to make the long-term and short-term bonuses equally desirable.

Furthermore, in Experiment 2 we investigate the impact of bonus level. Smaller future rewards have been shown to be discounted at a steeper rate than larger equivalents, a phenomenon referred to as the magnitude effect (e.g., Kirby, 1997). Drawing on this research, we formulate Hypothesis 2e as such: Fund companies offering smaller bonuses would need to increase their long-term

bonuses more than fund companies offering larger bonuses, in order to make the long-term bonus equally desirable as the short-term bonuses.

Method

*Participants.* The participants were another 36 undergraduates (25 women) enrolled in different study programs at the University of Gothenburg. They were recruited through sign-up sheets and electronic mails. Their mean age was 32.1 years (*SD* = 10.7).

*Design*. A 3 (uncertainty: equal vs. decreasing vs. increasing) by 3 (portfolio value: low vs. medium vs. high) within-groups experimental design was used.

*Procedure*. Participants were contacted by electronic mail, asked to access a web address, and answered a questionnaire accessible at this web address. They were informed that the questionnaire consisted of questions about preferences for different bonus systems used to incentivise stock portfolio managers. The participants were instructed to complete the survey without a break in an environment where they could work undisturbed. The questionnaire took approximately 30 minutes to answer. After having completed the questionnaire, the participants were compensated with a voucher worth 50 SEK (approximately US$ 7.5).

The participants were asked to imagine that they were employed by a fund management company as a stock portfolio manager responsible for nine different portfolios, identified by the letters A to I. For each stock portfolio a forecast of the expected future value development over the upcoming four-year period was presented (see details below). The task was for each stock portfolio (1) to choose between receiving four short-term bonuses – one after each of the four years – or one long-term bonus at the end of the four-year period, and (2) to state how large (in SEK) the worst expected long-term bonus would need to be in order to make them indifferent between the short-term and long-term bonuses.

For each of the nine stock portfolios the best-case and worst-case portfolio values every fourth month (quarter) over the four-year period were presented in a table. It was clarified that the outcome at any given year was independent of the outcomes the other years. The purpose of the table was to make transparent how their bonuses were associated with the value development of the stock portfolios. The portfolio values upon which the bonuses were based (i.e., the last quarter each year) were highlighted in the tables. The interspersed portfolio values upon which bonuses were not based were generated by random sampling from normal distributions.

The levels of the highlighted portfolio values were varied across three experimental conditions, the expected portfolio value at the end of the four-year period (as well as the mean of the added

expected portfolio values at the end of each year) being 6.5, 7.5, and 8.5 million SEK in the low, medium, and high portfolio value conditions[2].

The highlighted portfolio values were also systematically varied in terms of uncertainty across three experimental conditions. In an equal-uncertainty condition, the interval between the best-case and worst-case outcomes were the same in each of the four years, and in decreasing-uncertainty (increasing-uncertainty) conditions the interval was large (small) the first year, medium-sized the second and third years, and small (large) the fourth year.

The four short-term bonuses and the single long-term bonus to be paid out were given in SEK below the table. The expected sizes of the bonuses (i.e., the midpoint of the interval between worst-case and best-case outcome) were 0.5% of the portfolio value at the end of each year for the short-term bonuses, and 2% of the portfolio value at the end of the four-year period for the long-term bonus. The solid lines in Figure 1 illustrate represent the best and worst bonus payouts in the condition with equal uncertainty and medium portfolio value. As may be seen, the difference between best-case and worst-case bonus payouts is 25000 SEK for each short-term bonus (after each year).

The participants were also asked how large (in SEK) the worst expected long-term bonus would need to be in order to make them indifferent between the short-term and the long-term bonuses. The participants were informed that the monetary interval between worst-case and best-case bonus outcomes would remain the same. To illustrate, for one of the portfolios the worst-case portfolio value was 5.0 million SEK and the best-case 10.0 million SEK. The long-term bonus – being 2 % of the portfolio value – would hence amount to at least 100,000 SEK and at most 200,000 SEK, maintaining an interval of 100,000 SEK between worst-case and best-case bonus outcome. If the participants then stated that the worst-case long-term bonus would need to be 150,000 SEK in order to make them indifferent between the short-term and long-term bonuses, this implies that the best-case long-term bonus would amount to 250,000 SEK.

The order in which the three uncertainty conditions were presented was counterbalanced across participants according to a latin square. Within each uncertainty condition, another latin square was used to counterbalance the order in which the three different portfolio values were presented.

*Results and Discussion*

Table 3 shows that the participants chose the short-term bonuses over the long-term bonus in 65.7% of the cases. Seven participants chose the short-term bonuses for all of the nine portfolios,

[2] As in Experiment 1, the portfolio values upon which bonuses were based were systematically varied in terms of increasing trend, decreasing trend, or no trend over the four-year period. As this manipulation did not notably affect the results of Experiment 1, it was in Experiment 2 included merely as a means of making value developments appear more realistic to the participants.

whereas none always chose the long-term bonus. In the equal-uncertainty condition, 74.1% choices were of the short-term bonuses. Lending Hypothesis 2a support, comparing this figure to the results of Experiment 1, where 86.4% of choices were of the short-term bonuses, indicates that introducing uncertainty about the bonus outcomes decreased preference for the short-term bonuses over the long-term bonus.

A 3 (uncertainty: decreasing vs. equal vs. increasing) by 3 (portfolio value: low vs. medium vs. high) repeated-measures analysis of variance (ANOVA) yielded a significant main effect of uncertainty, indicating that when uncertainty decreased participants were less likely to choose the short-term bonuses ($M_{decreasing}$ = 38.1% vs. $M_{equal}$ = 74.1% vs. $M_{increasing}$ = 84.3%), $F$ (2,70) = 21.44, $p$ <.001, $\omega^2_{partial}$ = .11. This gives support to Hypothesis 2b positing that preference for the short-term bonuses would be weakest when associated with more uncertainty than the long-term bonus. Support was however not obtained for Hypothesis 2c stating that in the conditions where the long-term bonus is associated with more uncertainty than the short-term bonuses, preference for the short-term bonuses would be even more pronounced than in Experiment 1. In fact, the introduction of uncertainty for bonus outcomes tended to, in various degrees, increase preferences for the long-term bonus across the board.

Three measures were constructed based on the reported minimum amount (in SEK) of how large the worst-case long-term bonus would need to be in order to be equally desirable as the long-term bonus. These measures are the reported worst-case long-term bonus in SEK (absolute indifference measure), the reported worst-case long-term bonus in percentage of the given worst-case long-term bonus (percentage indifference measure), and the midpoint of the interval between the best-case bonus outcome and the reported worst-case outcome in percentage of the midpoint of the interval between the given best-case and the given worst-case long-term bonus (midpoint indifference measure)[3]. Table 4 displays these measures confined to choices of the short-term bonuses over the long-term bonus. On the absolute indifference measure it may be seen that in order to make the long-term bonus equally desirable as the added short-term bonuses, a larger worst-case long-term bonus is required in the decreasing-uncertainty conditions than in the increasing-uncertainty conditions. At the same time, the percentage indifference measure indicates that a higher percentage increase of the worst-case long-term bonus is required in the increasing-uncertainty conditions than in the decreasing-uncertainty conditions. This is explained by the fact that the given worst-case long-term bonus is lower in the increasing-uncertainty (and equal-uncertainty) condition than in the decreasing-uncertainty condition, at the same time as the given

[3] The midpoint measure is calculated as 100 x (d'-d)/d where *d'* denotes the interval between the best-case bonus outcome and the reported value and *d* the interval between the best-case and worst-case bonus outcome.

best-case long-term bonus is higher. Participants who do not prefer the long-term bonus are thus likely to demand a higher worst-case long-term bonus in the latter condition than in the former, but the required percentage increase of the worst-case bonus will nevertheless be larger in the former condition than in the latter.

Most attention should be given to the midpoint indifference measure, which is comparable to the percentage indifference measure in Experiment 1, as both measures target the expected bonus value. In Experiment 1 participants stated that the long-term bonus (in the 4-year condition) would need to be on average 42.8% higher than the added short-term bonuses in order to be equally desirable. In support of Hypothesis 2d Table 4 shows that the corresponding figure in Experiment 2 is 19.6% when averaged across all experimental conditions. In the low portfolio value condition a slightly larger increase of the long-term bonus is required than in the medium and high portfolio value conditions. While this difference is small, it is in line with Hypothesis 2e as well as with previous time-discounting research on the so-called magnitude effect (smaller amounts being discounted less than larger amounts; Kirby, 1997).

Table 4 furthermore shows that a substantially larger increase of the long-term bonus (the midpoint indifference measure) is required in the increasing-indifference condition than in the decreasing-uncertainty and equal-uncertainty conditions. These results mirror those presented in Table 3, where the long-term bonus was shown to be less desirable in the former condition than in the latter conditions. This is consistent since in the former condition the desirability of the short-term bonuses relative to the long-term bonus is potentiated by the long-term bonus being more uncertain than the added shorter-term bonuses. The most relevant comparison to the results of Experiment 1 is the equal-uncertainty condition, where the added short-term bonuses and the long-term bonus are associated with the same amount of uncertainty. In the equal-uncertainty condition, the long-term bonus needs to be 17.5% larger than the added short-term bonuses in order to be equally desirable (see Table 4). Hypothesis 2d is supported as this percentage is substantially smaller than 42.8% in Experiment 1 when there was no uncertainty.

It is concluded that in line with previous research (Keren & Roelofsma, 1995), introducing uncertainty in choices concerning future outcomes reduces the extent to which far-future outcomes are discounted relative to proximal outcomes. The results of the ecologically more valid Experiment 2 hence indicate that in order to be equally motivating as added short-term bonuses, a long-term bonus would indeed cause increased bonus expenditure to a fund management company, but not as substantially increased as suggested by the results of Experiment 1.

## General Discussion

In this article we have shed light on an important question facing fund management companies considering shifting their performance-related bonus schemes from being based on short-term intervals such as quarterly or annual (which is common practice; see Hedesström, 2010; Unzicker, 2008) to being based on longer-term intervals. In Experiment 1 we show that a bonus paid out with certainty after four years needs to be increased with more than 40% relative to four annual bonuses paid out during the four-year period. Switching from quarterly to annual, or from half-yearly to bi-annual monitoring intervals requires lesser increases of bonus payouts, 19% and 26%, respectively. In order to counteract short-termism in the finance sector, monitoring intervals should ideally stretch over periods longer than two years. In the follow-up Experiment 2 where we introduce uncertainty in bonus payments, we therefore focused on the comparisons between annual vs. four-yearly monitoring intervals. We show that when there is uncertainty regarding how large the paid-out bonuses will be, a lesser increase of the 4-year bonus is needed, about 17 %, in order to make it equally desirable as the added annual bonuses.

The present study is confined to preference for various bonus payments. It is plausible to assume that more preferred bonus systems will be more motivating than less preferred bonus systems. A question beyond the scope of this article is still whether stock portfolio managers will enhance their trading activities when they are more motivated, and if this results in better outcomes. It should be pointed out, however, that there is another potential incentive for fund management companies to increase their monitoring intervals, namely as a means of keeping competent staff over longer periods of time. Some component of performance-related pay is indeed currently often included in stock portfolio managers' remuneration package for just this reason (Hedesström, 2010). Of course, there is also the corresponding risk of "locking in" less competent staff, although this risk may presumably be managed in ways outside the bonus system.

While the results indicate that the introduction of prolonged evaluation periods may cause larger costs to fund management companies in the form of increased bonus payments, this must be weighted against potential benefits. In addition to the potential social and environmental benefits associated with long-term investment strategies, fund management companies may reap financial benefits from introducing longer evaluation periods arising from (1) portfolio managers' increased mandate to neglect short-term stock price movements in favour of long-term stock price movements, potentially leading to improved long-term returns, and (2) diminished risk of rewarding superior short-term performance that arise simply by chance and instead rewarding performance arisen from skill, hence providing a more accurate basis for incentives at the same time as potentially decreasing total bonus expenditure.

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Table 1

*Mean Percentages of Choice of Short-Term Bonuses Related to Time Span (Experiment 1)*

| Time span | | |
|---|---|---|
| 1 year | 2 year | 4 year |
| 71.6 | 84.0 | 86.4 |

Table 2

*Mean Percentage Indifference Measure Related to Time Span (for n=14 participants choosing the short-term bonuses) (Experiment 1)*

| Time span | | |
|---|---|---|
| 1 year | 2 year | 4 year |
| 19.2 | 25.5 | 42.8 |

Table 3

*Mean Percentages of Choice of Short-Term Bonuses Related to Uncertainty and Portfolio Value (Experiment 2)*

| | Uncertainty | | |
|---|---|---|---|
| Portfolio value | Decreasing | Equal | Increasing |
| Low | 38.9 | 83.3 | 86.1 |
| Medium | 36.1 | 69.4 | 83.3 |
| High | 41.7 | 69.4 | 83.3 |

Table 4

*Means of Absolute Indifference Measure (SEK), Percentage Indifference Measure, and Midpoint Indifferent Measure (%) Related to Uncertainty and Portfolio Value Computed for Choices of Short-Term Bonuses (Experiment 2)*

| Measure | Portfolio value | Uncertainty | | |
|---|---|---|---|---|
| | | Decreasing | Equal | Increasing |
| Absolute indifference measure (SEK) | | | | |
| | Low | 135,000.0 | 102,241.4 | 88,491.9 |
| | Medium | 152,916.7 | 123,587.0 | 106,666.7 |
| | High | 135,000.0 | 143,437.5 | 129,000.0 |
| Percentage indifference measure | | | | |
| | Low | 22.7 | 27.8 | 77.0 |
| | Medium | 17.6 | 23.6 | 52.4 |
| | High | 20.3 | 19.5 | 43.4 |
| Midpoint indifference measure (%) | | | | |
| | Low | 17.1 | 19.2 | 29.6 |
| | Medium | 15.7 | 15.3 | 24.4 |
| | High | 13.8 | 17.9 | 22.9 |

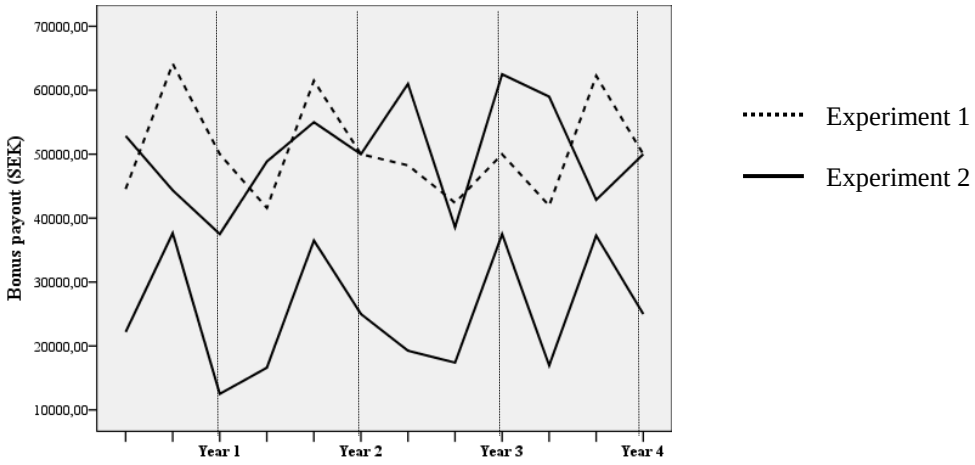


*Figure 1.* The expected short-term bonus payouts in Experiment 1 (in the condition with a four-year time span and no trend) and in Experiment 2 (best and worst expected short-term bonuses in the condition with equal uncertainty and medium portfolio value).