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Aligning interests over the long term: An incentive structure for U.S. 501(c)(3) private foundations

CHRISTOPHER RAPCEWICZ

AUTOMATION

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Aligning interests over the long term: An incentive structure for U.S. 501(c)(3) private foundations

CHRISTOPHER RAPCEWICZ¹ | Director of Investment Risk Management and Operations,
The Leona M. and Harry B. Helmsley Charitable Trust

ABSTRACT

The Great Financial Crisis (GFC) demonstrated the consequences of adverse incentives. Although the principle that the risk to the agent's incentive payout should be as similar as possible to the risk experienced by the principal is easy to state, it is very difficult to achieve in practice. An incentive structure for a U.S. foundation that must make a return on its endowment to offset its required 5% annual payout is proposed. The incentive structure is a combination of call spreads linked to the performance of the foundation's invested assets and put spreads linked to the performance of the foundation's invested assets whose payout is the carry-forward of investment staff's unearned incentive compensation. With this structure, the risk of the staff's incentive compensation is similar to the investment risk of the foundation's invested assets. One of its benefits is that it further encourages investment staff to protect capital when necessary.

¹This research is that of the author alone and does not reflect the views of the Helmsley Charitable Trust

1. INTRODUCTION

Every organization faces the challenge of aligning the activity of its staff with its goals. This situation arises because the staff acting as an agent of the firm (or so-called principal) might have different goals. Consequently, the principal is well-advised to try to ensure that the interests of both parties are aligned. Depending upon the principal's goals, it may not be possible to align interests; consequently, the principal may have to change goals in order to achieve alignment. Agency Theory [Gibbons (1998), Eisenhardt (1989), Roberts (2011)] attempts to address this relationship. Historically, it has concentrated on resolving two problems that can occur in the agency relationship: the misalignment of interests of the organization and the staff, and the verification of the staff's activities.

Experience has shown that aligned goals can be very difficult to achieve. Kerr (1975) presents a long list of examples that highlight an additional risk that a principal faces when attempting to align goals, namely that the employee incentives actually misalign interests. Indeed, in the wake of the GFC, the Financial Stability Board (FSB) published its "Principles for sound compensation practices" [FSB (2009)], which identified the incentive structures at financial institutions as a key causal factor in the GFC, because they created "perverse incentives [that] amplified [...] excessive risk-taking." The "Principles" called for the financial services industry to align employees' goals with the long-term profitability of the company. Post GFC, reviewing the theory and evidence on incentive pay, Roberts (2011) commented that "it is unwise to give strong incentives based on only some aspects of the overall risks and returns that the Agent's actions generate." Indeed, the GFC made very clear that the key problem with aligning incentives is that it is not at all obvious how to create an incentive structure in which the risks to the agent's incentive payout mirror sufficiently closely the principal's investment risk.

In this article, we consider the case of a U.S. foundation that has been mandated to survive into perpetuity. It faces the challenge of how to achieve sufficient returns over time to offset the required 5% annual payout, the loss of purchasing power due to inflation, and any costs associated with managing the foundation's assets. For this reason, foundations hire investment staff to manage the investible assets of the foundation and set the goal of ensuring that the it survives into perpetuity. The foundation also uses performance-linked financial

incentives to align the pay of the investment staff with the achievement of the foundation's objectives.

We develop an incentive structure for the investment staff of a U.S. 501(c)(3) private foundation that invests its endowment. The risk of the staff's incentive payout is designed to be similar to the investment risk of the foundation's invested assets. This incentive structure cannot be achieved with a simple combination of options on the performance of the foundation's endowment.

2. THE FOUNDATION'S AND STAFF'S PREFERENCES

It is worthwhile to consider in detail the foundation's reasons for offering financial incentives and the staff's preferences for an incentive structure. Survival of the foundation is the sine qua non for the foundation to ensure its charitable objectives. The foundation provides competitive (including incentive) compensation in order to attract and retain the high-caliber talent needed to manage the assets. The foundation, however, is not indifferent to how the staff achieve returns on the investment assets. A foundation, like most organizations, prefers a more stable return stream to one in which the value of the assets can fall significantly and unpredictably, resulting in the foundation terminating grant-making staff, defaulting on grants, or having the endowment impaired permanently. Further, the foundation prefers that the incentive structure keep the staff continuously focused on achieving the objective.

The staff's preferences for incentive compensation are well aligned with the foundation's desired outcomes. The staff prefer that the full incentive compensation should be received if the foundation's investment objective is achieved. The staff, too, prefer a stable salary to a very volatile one. They are also aware of the trade-offs between working in a commercial organization and a foundation and, therefore, should be less inclined to sacrifice the foundation's interest to their own interest. The staff, like all market participants, are forward looking. Their preference for more control over their salary means that they prefer that the incentive compensation not be structured around a single instant at which the payout or some portion of it is received and the rest lost but have a more continuous character; this aligns very well with the foundation's desire for a staff continuously focused on achieving the foundation's goals.

Although the foundation’s and staff’s preferences for incentive compensation are initially well aligned, the structure of the incentive compensation could misalign the goals of the foundation and staff. As Ordóñez et al. (2009) note, “goal setting is one of the most replicated and influential paradigms in the management literature” that can “inspire employees and improve performance” but “there are many ways in which goals go wild: they can narrow focus, motivate risk-taking, lure people into unethical behavior, inhibit learning, increase competition, and decrease intrinsic motivation.” The authors provide a list of ten questions to consider when developing an incentive structure:

1. Are the goals too specific?
2. Are the goals too challenging?
3. Who sets the goals?
4. Is the time horizon appropriate?
5. How might goals influence risk taking?
6. How might goals motivate unethical behavior?
7. Can goals be idiosyncratically tailored for individual abilities and circumstances while preserving fairness?
8. How will goals influence organizational culture?
9. Are individuals intrinsically motivated?
10. Consider the ultimate goals of the organization and what type of goal (performance or learning) is most appropriate?

Two common types of incentive structures used in finance are the so-called “trader’s option” and the benchmarked relative-performance incentive structure. The following analysis demonstrates that both of these incentive structures are perverse and identifies their flaws. An incentive structure that does not have these problems is presented.

3. THE TRADER’S OPTION

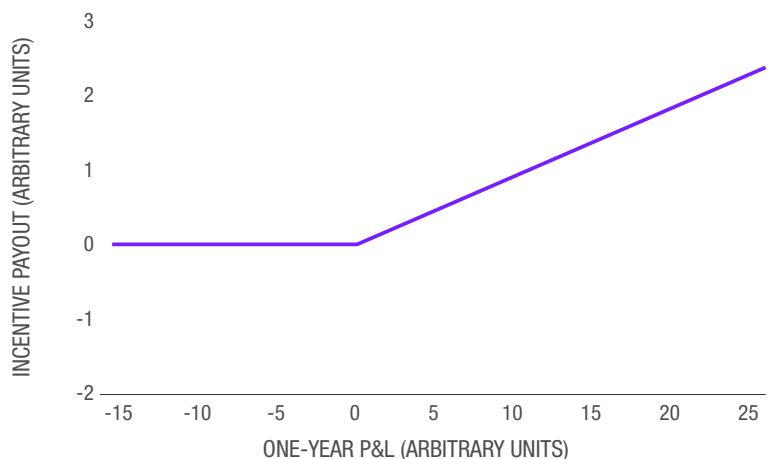
The trader’s option is an incentive structure that was originally employed by banks to pay traders on the trading floor. It is very simple: if, at the end of the year, a trader has made a profit, they receive a percentage of that performance; if they made a loss, then they would not receive any payout. Figure 1 shows the trader’s incentive payout at year end as a function of profit and

loss (P&L). It has the form of a long call-option on the P&L in which the strike price is zero P&L.

The incentive structure in option terms provides insights into how to improve the structure’s design. The traders hold a long call-option on their P&L or, equivalently, the bank is short an option. This simple option can be priced with the Black-Scholes formula from which it is clear that the traders can increase the value of their long option by increasing the volatility of their P&L, i.e., by taking more risk. For this reason, the bank is said to be short volatility and the trader long volatility (volatility being a proxy for risk in the option pricing formula). The traders are incentivized to take as much risk as possible: if successful, they receive a handsome payout; if they suffer large losses, they lose their jobs. In the latter case, the bank is responsible for the losses. Taleb (2008) provides a useful analysis of this behavior. This asymmetry in the incentive structure is called the trader’s option. The asymmetric nature of the payoff can encourage staff to take excessive risk (from the bank’s and society’s perspective) in order to get a larger incentive payout.

The single point-in-time nature of the incentive compensation with its bullet payout can also distort the behavior of the trader. The trader can follow a strategy to take advantage of the single point-in-time nature of the payout: they can create complex financial instruments in which there is a likelihood of underperformance in some distant future. In this way, the trader could enjoy several years of payouts and leave the bank before the instruments blow up. This is exactly what happened during the GFC. In good times, traders at the banks created liabilities for the banks that were conditional on events that were thought to be unlikely and, therefore,

Figure 1: The trader’s option



low risk. The traders received their incentive payouts in the years that the bank was paid to assume these conditional liabilities. The actual risks were realized only later during the GFC. The so-called CDO liquidity puts were an example of this phenomenon [Jones (2007)].

Another way in which the structure of the compensation can impact an organization is through its signaling effect. Risk-seeking individuals would be very attracted to the possibility of working for an organization that offered a trader's option and would pursue such employment opportunities aggressively. Gordon Gekko [Stone (1987)], the Masters of the Universe and Big Swinging Dicks [Lewis (1989)] demonstrate that the incentive structure was so successful in attracting a certain type of risk-seeking individual that the personality type has become a staple of popular culture. As a result, the traders at the banks could become disproportionately composed of aggressive risk-takers, which would result in a higher likelihood of a blow-up or multiple blow-ups, situations in which traders took excessive risks and the bank suffered heavy losses [Taleb (2008)].

Banks realized the problems associated with this asymmetric payoff and tried to “hedge” their short volatility by introducing risk management into the organization. Risk managers received a relatively constant salary and were held responsible if a trader whose risk they were “managing” were to suffer a large loss. Thus, the situation of the risk manager was meant to be specular to that of the trader. But, there was a mismatch, a basis risk; while the trader was long a call option on his/her P&L, the risk manager lost his/her job instead of having to repay the losses; and the bank still bore the financial responsibility. Of course, the risk manager's incentive structure had its own limitations [Taleb (2008)].

After the GFC showed the perversity of the single point-in-time bullet payments, banks introduced deferments and claw-backs in an attempt to mitigate the time-horizon risk embedded in their flawed incentive structure. From the perspective of “goals gone wild,” the trader's option created very different risk profiles for the bank and the trader, with the consequence of a culture heavy with aggressive risk-takers and excessive risk-taking. The time-horizon of the incentive structure narrowed the focus to the current year and further misaligned interests.

It is not clear whether the incentive structure was inconsistent with the bank's ultimate goals since

the reason for offering the unlimited upside of the trader's option to its trading staff was the bank's desire to maximize profits.² High leverage and complex instruments used by banks exacerbated the consequences of the perverse incentive structure.

Foundations are not highly leveraged and they do not make use of complex, levered, financial structures to take risk. Nonetheless, an incentive structure that does not cause the foundation to be short the trader's option is desirable.

“Unless the market risk of the staff's incentive payout and the foundation's invested assets align, the incentive structure will be adverse; consequently the performance reference for any incentive structure must be the performance of the foundation's investment assets.”

4. CHARACTERISTICS OF INCENTIVE STRUCTURES

The previous example shows how a well-meaning, but poorly designed, incentive structure can result in unforeseen, negative outcomes. It makes sense to analyze any proposed incentive structure in detail in order to ascertain what risks each aspect of the incentive structure poses and how they can be combined in order to align the investment staff with the foundation. The incentive structure consists of four characteristics: the base salary, the payout formula, time dependence of the pay off, and reference for the payout. An incentive structure is most effective if it aligns the goals of the staff and the foundation.

A poor choice of any of the characteristics will result in a perverse incentive structure that can, in theory, fail to align interests and leave the foundation vulnerable to principal-agent problems. For example, if the foundation sets the performance-linked compensation too small, the staff may be indifferent to the investment outcome; if the foundation sets the base compensation too low, the foundation may risk high turnover of staff and excessive risk-taking to achieve the payout; if the foundation makes it too difficult to achieve the

²There is one institution that has managed, so far, to make this perverse incentive structure work. The organization is a hedge fund, is owned by a single person and, hence, has one principal, employs rigorous risk management, traders are fired, almost without exception, if they suffer a draw-down greater than a set amount, and, the hedge fund trades only liquid market-traded securities.

incentive compensation, the staff may act as if it does not exist and be indifferent to the investment outcome; if the foundation links the achievement of the incentive compensation to the return during a single year, staff's attention may be myopically focused on the current-year's return; if the foundation judges the performance of staff relative to a reference that is unrelated to the desired performance of the foundation's assets, staff may be focused on a task that, in the best case, will be peripherally related to the foundation's objectives and, at worst, unrelated. Notwithstanding any misalignment that may occur as a result of a flawed incentive structure, the good will of the staff and their desire for success of the foundation's mission may mitigate the problems of the incentive structure.

5. BENCHMARKED RELATIVE-RETURN INCENTIVE STRUCTURE

Foundations often substitute the return of a market-based, passive benchmark for the performance of the foundation's investment portfolio when determining the incentive compensation for the staff. This passive benchmark normally consists of an allocation to equity, fixed income, and, possibly, alternative indices. The staff receive their incentive compensation based upon outperformance of the market benchmark, up to some maximum. Often, the outperformance is calculated on a rolling three-year basis, paid out once a year. Does this incentive structure help the foundation achieve its desired outcome?

Measuring performance relative to the three-year cumulative return of the benchmark together with the single point-in-time nature of the performance-linked

payout may better condition the behavior of the staff. Staff is motivated to deviate from the benchmark in a way that increases the probability of achieving the incentive payout. If the staff do decide to deviate, it will be to take more risk rather than less risk. This is because it is generally believed that the equity markets go up, so that taking more risk than the benchmark increases the likelihood outperforming it. As a result, the foundation's portfolio risk should be expected to be higher than the benchmark. This tendency to take unnecessary risk will be further exacerbated if peer performance plays a role in the evaluation of the staff. If one takes more risk than one's peers, the reasoning goes, one is more likely to outperform them (except in those unfortunate years in which there is a market sell-off). Indeed, encouraging staff to achieve a high peer ranking is equivalent to encouraging the staff to take excessive risk.

The benchmarked relative-return incentive acts as a perverse incentive-structure that creates a situation in which the staff's risk is misaligned with the foundation's risk. For the foundation, reducing risk means reducing absolute risk, i.e., increasing the allocation to cash and short-term U.S. Treasuries. For the staff, reducing risk means moving allocations closer to passive, benchmark allocations, which could in certain circumstances result in an absolute increase in risk. This is misalignment. The point-in-time aspect of this incentive structure misaligns staff's interest from the foundation's by myopically focusing the staff on the current year's performance and discouraging them from acting to preserve capital. In practice, the impact of the misalignment may be ameliorated due to the type of person that is attracted to working at a foundation.



Finally, there is no certainty that a passive, market benchmark will achieve the performance goals of the foundation. Consequently, the staff could end up with their incentive compensation determined by a performance goal unrelated to the return objective of the foundation.

From the perspective of “goals gone wild,” the benchmarked relative-return incentive structure creates overly specific goals and influences risk taking by decoupling the staff’s outcomes from that of the foundation’s. The single point-in-time payout focuses the staff’s attention on the current year instead of a longer horizon.

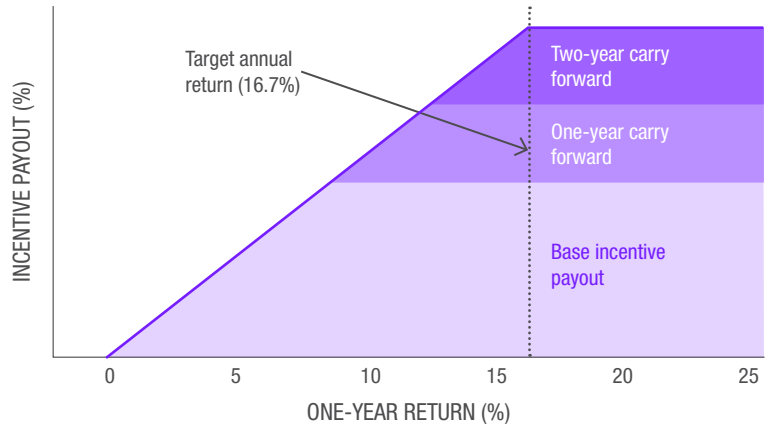
6. CALL-SPREAD PUT-SPREAD (CSPS) INCENTIVE STRUCTURE

Is it possible to design a better incentive structure? The discussion above showed the two key factors that result in a perverse incentive structure: a misalignment of the risks between the staff and the organization and the bullet-style point-in-time nature of the incentive compensation structure.

The analysis of the benchmarked relative-performance incentive structure showed that unless the staff’s and the foundation’s risks align, the incentive structure will be perverse; consequently the reference for any incentive structure must be the performance of the foundation’s investment assets. The analysis of the trader’s option revealed the short-option nature of the incentive structure that banks tried to “hedge” by introducing risk management. The most effective way to deal with the short-volatility exposure that led to excessive risk taking is to offset it with a long-volatility exposure. Instead of trying to “hedge” organizationally, the banks should have created an incentive structure that naturally hedged their short volatility by embedding short optionality in the trader’s payoff, which would have discouraged excessive risk-taking; they would have better mitigated the risk associated with the trader’s option. The structure that offsets the short-volatility with a long-volatility exposures is a call spread linked to the performance of foundation’s investment assets.

The analyses above showed bullet-style payouts result in flawed incentive structures. The benchmarked relative-performance incentive structure tried to mitigate this risk by using a three-year rolling performance as the reference. The incentive structure is perverse because the staff are incentivized to take excessive risks and not to preserve capital when necessary, as de-risking

Figure 2: The call-spread payout

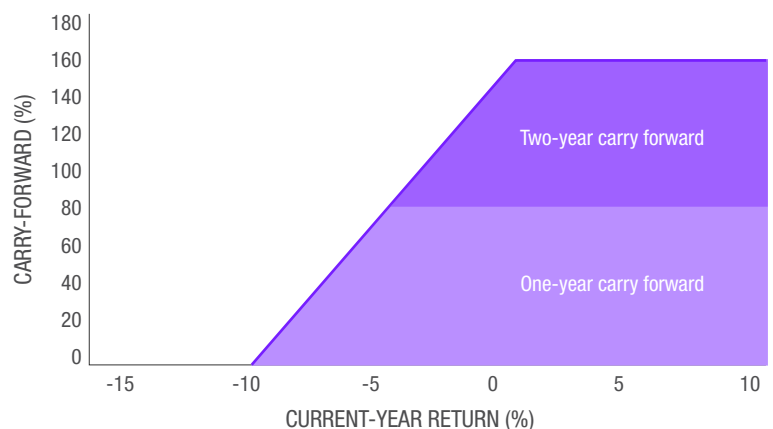


The strategic return-objective is assumed to be 7%, the previous year’s performance at 5%, and the return of two year’s prior at 0%. The one-year and two-year carry-forwards depend on the returns of the two prior years

the portfolio results in the staff taking significant risk. This can be resolved by changing the structure from a bullet-style payout to multi-year payout in which unattained incentive compensation can be carried forward for a period of time. This encourages the staff to protect capital by rolling forward the incentive payout to the future when economic and market conditions have improved. The payout structure for a single year is shown in Figure 2.

The introduction of an explicit target return provides the foundation with a new tool that can be used to align

Figure 3: The put-spread embedded in the unearned incentive carry-forward



The upper strike is 0% and the lower strike is -10%. If the fund were down by 5% then only the unearned payout from the current year would be carried-forward; the unearned payout from the prior year would be reduced to zero because the staff did not protect capital.

goals, namely the portion of the incentive compensation that is not earned in the current year. Providing staff with the possibility of achieving the unearned portion of a previous year’s incentive compensation obviously has positive value. The foundation can make its attainment contingent upon the staff having made up the previous year’s underperformance and not having suffered a draw-down. This is achieved by embedding a short put spread in the unearned incentive-payout carry-forward. The put spread makes the staff more sensitive to the impact of draw-downs and signals the maximum draw-down that the foundation is willing to undergo in order to achieve its target return. If the draw-down is greater than a certain amount, there is no carry-forward of the unearned incentive payout. The upper strike of the put spread determines the loss at which the carry-forward payout begins to decrease and the lower strike determines the loss at which no unearned incentive payout is carried forward to the next year. This carry-forward is shown in Figure 3 for the case that two years of unearned incentive payouts are being carried forward.

The choice of the number of years over which to evaluate the performance is important. The longer the period, the more tightly aligned are the interests of the foundation and the staff. However, a problem with too long of a period is that at normal levels of employee turnover, the staff could find themselves in a situation where the current staff was not responsible for the bulk of the performance. Any finite look-back invariably introduces a basis effect when large positive or negative returns are no longer included. A three-year look-back is a common compromise so that unearned compensation would carry-forward for two years (the n-year look-back should always be paired with an n-year period to achieve the unearned payout in order to align the interests, which means a carry-forward for n-1 years). In the rest of the article, a three-year look-back will be assumed for convenience.

The target return for a given year is the performance needed to ensure that the three-year cumulative performance of the foundation’s asset is equal to the three-year target performance.

Table 1: Numerical example of the incentive structure for a typical case over 10 years with a three-year lookback

YEAR	1	2	3	4	5	6	7	8	9	10
3-year target	7.0%	14.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%
Target return r_{target}	7.0%	2.2%	0.3%	5.0%	10.1%	47.2%	33.2%	1.7%	4.5%	1.3%
Performance r_0	12.0%	9.0%	7.0%	4.0%	-20.0%	15.0%	4.7%	12.0%	8.0%	11.5%
Base incentive compensation I_{base}	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
First carry forward C_1	0.0%	0.0%	0.0%	0.0%	16.5%	0.0%	54.6%	60.9%	0.0%	0.0%
Second carry forward C_2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	54.6%	0.0%	0.0%
Target incentive compensation I_{target}	80.0%	80.0%	80.0%	80.0%	96.5%	80.0%	134.6%	195.5%	80.0%	80.0%
Pay-out percentage	1.00	1.00	1.00	0.79	0.00	0.32	0.14	1.00	1.00	1.00
Achieved incentive compensation $I_{achieved}$	80.0%	80.0%	80.0%	63.5%	0.0%	25.4%	19.1%	195.5%	80.0%	80.0%
Unearned base incentive compensation C_0	0.0%	0.0%	0.0%	16.5%	80.0%	54.6%	60.9%	0.0%	0.0%	0.0%
Unearned first carry forward C'_1	0.0%	0.0%	0.0%	0.0%	16.5%	0.0%	54.6%	0.0%	0.0%	0.0%
Haircut h	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Unearned base incentive compensation after Haircut C'_1	0.0%	0.0%	0.0%	16.5%	0.0%	54.6%	60.9%	0.0%	0.0%	0.0%
Unearned first carry forward after Haircut C'_1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	54.6%	0.0%	0.0%	0.0%

A call spread on the one-year target performance of the foundation’s investment assets, in which any unearned incentive compensation is rolled forward for up to two years, is an incentive structure that resolves the problems highlighted above. The lower strike of the call option should be set at zero and the upper strike to the annualized three-year target return. Any unearned incentive compensation from one year can be earned in the subsequent two years (for a total of three years) subject to being haircut as a result of negative performance. This incentive structure avoids both problems and is summarized in detail in the Appendix at the end of the article.

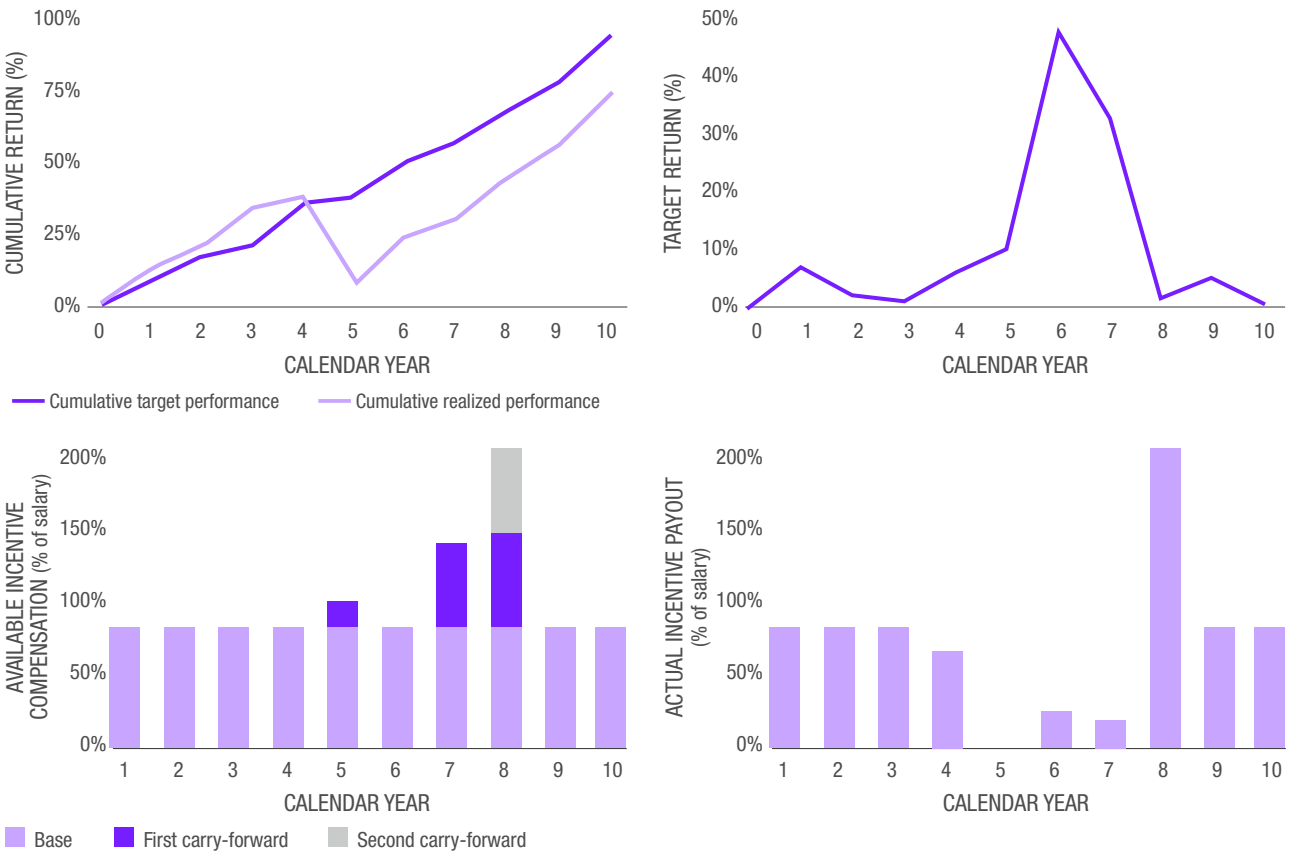
The incentive payout at the end of the year is equal to the available incentive payout times the ratio of the current year’s return divided by the target return. Any unearned payout is carried forward for up to two years and is earned in order of decreasing priority: current year payout, then the unearned compensation from the previous year, and finally the unearned payout from two years ago.

7. NUMERICAL EXAMPLE

Table 1 provides a detailed numerical example of how the incentive payout would work in a typical case over a ten year period. In the example, the strategic return objective $r_{sro} = 7\%$, the cumulative performance is measured for three years ($n = 3$), and the incentive compensation is 80% of the base salary ($l_{base} = 80\%$). In the example, the payout is quoted as a percentage of the base salary. For instance, if the base salary were \$300K and the staff were to receive incentive compensation of 25.4%, then the staff would receive incentive compensation of \$76.2K. Any carry-forward begins to be haircut if the performance of the fund is negative ($X_{upper} = 0$) and there is no carry-forward if the fund is down more than 10% ($X_{lower} = 10\%$). The incentive structure thus signals to the staff to attempt to make 7% per annum and to preserve capital.

The first two years show how a transition to the incentive structure could work: in the first year, the return target (r_{target}) would be 7% and in the second year

Figure 4: The CSPS incentive structure for a numerical example with a three-year lookback



the target return would be calculated using only the one year return. By the third year, the incentive structure would be fully implemented.

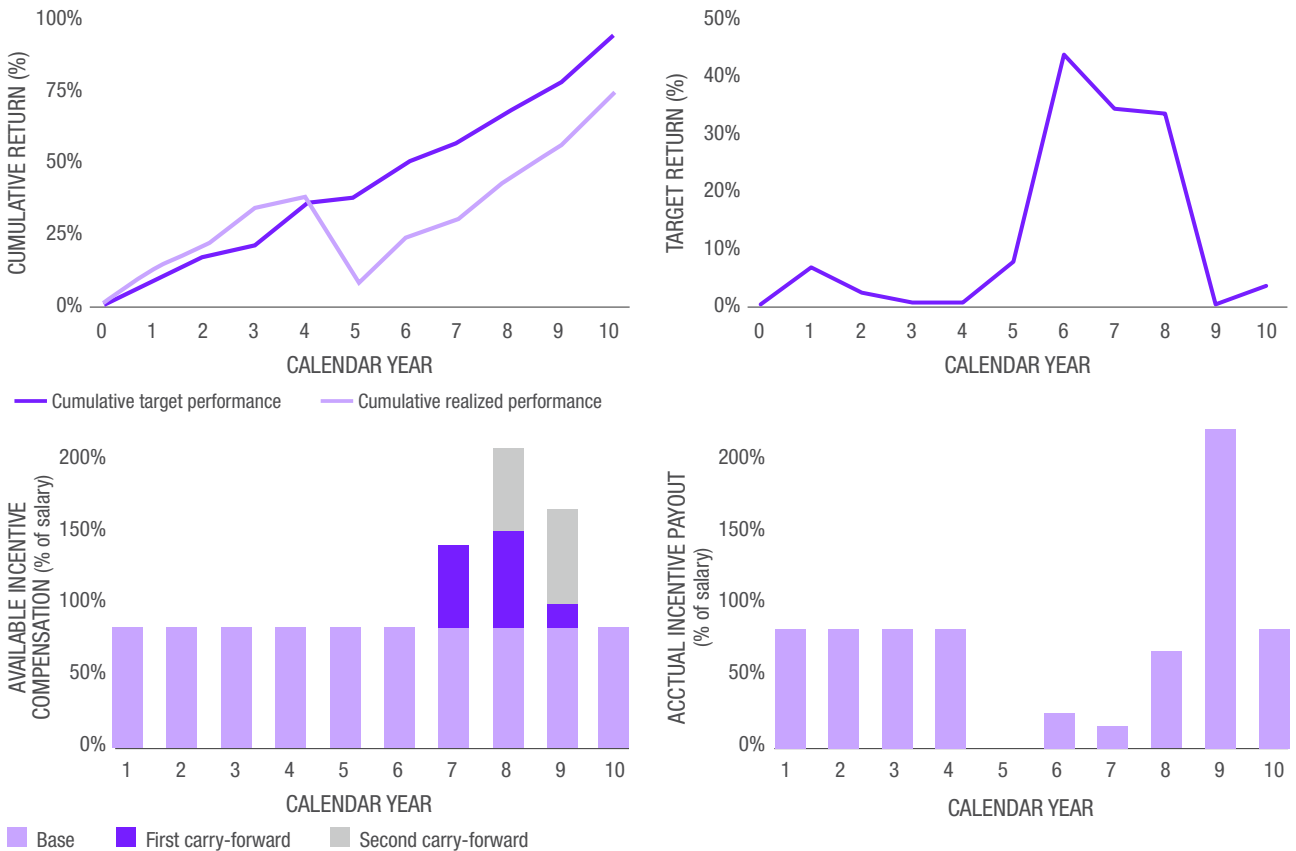
In the hypothetical example, in year one, the one-year target return would have been 7%, the performance was 12.0%, and the staff would have received the entire incentive compensation (and there would not be any carry forward). In year 2, the cumulative return target would have been 14.5%. Since the previous year's return was 12.0%, the target return for the year would have been 2.2%. As performance was 9%, the staff would have received the entire incentive payout. In year 3, the three-year cumulative return would have been 22.5% (7% compounded for three years); since the cumulative return over the prior two years was 22.1%, the target return would have been 0.3%. The performance was 7% and the staff would have received the all of the performance compensation (80% of their base salary). Since the cumulative return of the prior two years was 16.6%, the target return in year 4 would have been 5%. As a result of the 4% performance, the staff would have received incentive compensation of

64%, with the remaining 16% carried forward to the subsequent year.

In year 5, the target bonus would have been 96% (of the base salary) but performance was -20%. Since the under-performance was less than -10%, the staff not only would not have received any incentive compensation, but there would be no carry-forward. As a result of one year's mediocre performance and the second year's poor performance, the target return for the year would have been 47.2% (the staff's cumulative two-year return was -16.8%) and the target bonus 80%. The 15.2% performance that year would have resulted in the staff receiving incentive compensation of 25%, leaving 55% to be carried forward to the next year.

In year 7, the target return for the year would have been 33.2% and the target bonus 135%. The 4.7% return for that year would have earned the staff incentive compensation of 19%, with 114% carried forward to next year. In year 8, the target return would have been 1.7% and the target bonus 196%. The 12% return would have earned the full 196% for the staff. In the

Figure 5: The CSPA incentive structure for the numerical example with a four-year lookback.



final two years, the staff's performance would have earned them the full bonus. Over the ten year period, the staff would have received 88% of the possible incentive compensation, in line with the fact that the NAV of the assets would have been 90% of the target NAV.

As noted above, increasing the look-back aligns more closely the interests of the staff and the foundation. Figure 5 shows for a four-year look back ($n = 4$).

8. FURTHER CONSIDERATIONS

The CSPS incentive structure is designed to encourage the staff to attempt to achieve the target return required by the foundation to survive into perpetuity while protecting capital. However, in the real world, the foundation may nonetheless suffer a significant draw-down. This was shown in the example. In the wake of the loss, it would be difficult, if not impossible, for the staff to achieve the entire bonus; however, they would be able to achieve some portion of the bonus that would mitigate the risk that they might leave in the face of an extended period without any bonus, as could happen if the staff underperformed under a “benchmarked relative-return incentive structure.”

Although the CSPS incentive structure was designed for a foundation, it has wider applicability; it provides insight into the origin of the “perverse incentives [that] amplified [...] excessive risk-taking” [FSB (2009)] and

played a significant role in causing the GFC. Indeed, the analysis presented here suggests that it may not be possible to align incentives if the principal demands that the agents maximize returns, since an unearned compensation cannot be defined due to the unlimited upside embedded in the incentive structure.

The CSPS also avoids a fundamental asymmetry between return and risk, namely that if one has two investments, A and B, and A has a higher expected return than B, then it is reasonable to assume that A has higher risk than B. However, if one has two investments, X and Y, and X has higher risk than Y, then one cannot assume that X has higher expected return than Y; one can easily find risky investments that have little or no expected return.

9. CONCLUSION

We presented an incentive structure that aligned well the interests of a U.S. foundation and its investment staff. An important prerequisite for the incentive structure was the recognition by the foundation that it was not trying to maximize returns each year but to achieve a specified target return over time. This permitted the creation of a new “asset,” namely the current year's unearned incentive compensation. By carrying forward this unearned incentive compensation and giving the staff the opportunity to earn it contingent upon the portfolio having recovered from the underperformance



and not having suffered a draw-down deeper than a specified amount, the risk profile of the incentive compensation approaches closely the risk profile of the investment portfolio.

Wider implications of the insights gleaned when designing the incentive compensation were also noted.

APPENDIX: ALIGNING INTERESTS OVER THE LONG-TERM: STEP-BY-STEP

- Establish the one-year strategic return-objective, r_{sro} ;
- Establish the number of years, n , over which the performance of the foundation's assets will be computed (below three years will be assumed, so $n=3$);
- Establish the base incentive compensation payout I_{base} ;
- Establish the one-year negative return, X_{upper} , at which the carry-forward begins to be haircut (reduced);
- Establish the one-year negative return, X_{lower} , below which no unearned incentive compensation is carried forward;
- The incentive structure can be introduced by increasing each year the number of years over which the current-year's target performance is calculated: for a three-year look-back, only the current-year return is used in the first year and the incentive compensation is the base payout; in year two, the previous year's performance is used to calculate the target return and available incentive compensation is the base payout plus any carry-forward from the previous year. In year three, the incentive structure is fully implemented.

1. At the beginning of the year, the prior year's return r_1 and performance r_2 from two years before are already known and the target return can be determined:

$$r_{target} = \max \left[\frac{(1 + r_{sro})^3}{(1 + r_1)(1 + r_2)} - 1, 0 \right] \quad (1)$$

2. The previous year's carry-forward C_1 is also known as is the carry-forward from two-years ago, C_2 . The target incentive compensation, I_{target} is:

$$I_{target} = I_{base} + C_1 + C_2; \quad (2)$$

3. At the end of the year when the performance, r_0 , is known, the payout is:

$$I_{achieved} = I_{target} \times \min \left[\max \left(\frac{r_0}{r_{target}}, 0 \right), 1 \right]; \quad (3)$$

4. If the current year's performance was positive and the entire incentive compensation was not achieved, determine the carry-forward:

$$C_0 = \max(I_{base} - I_{achieved}, 0) \\ C'_1 = \max(C_1 - \max(I_{achieved} - I_{base}, 0), 0). \quad (4)$$

The total carry-forward is $C = C_0 + C'_1$ and any unearned portion of C_2 is lost;

5. If the current year's performance was negative, determine how much the carry-forward should be haircut (recall $X_{lower} < X_{upper} < 0$):

$$h = C \times \min \left[\frac{(X_{upper} - \min(X_{upper}, r))}{(X_{upper} - X_{lower})}, 1 \right] \quad (5)$$

6. If the carry-forward haircut is not zero, calculate the final, adjusted carry-forward:

$$C_1^f = \max(C'_1 - h, 0) \\ C_0^f = \max(C_0 - \max(h - C'_1, 0), 0) \quad (6)$$

7. The available incentive compensation for the next year is then:

$$I_{base} + C_0^f + C_1^f \quad (7)$$



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