COMPENSATION, PERKS, AND WELFARE

PHILIPP WEINSCHENK*

November 19, 2012

Abstract

We study the provision of perks in an agency model with moral hazard. The principal may provide perks because these allow her to lower the monetary incentives. We show that even though perks are contractible, their provision may be inefficient. Interestingly, there can be over- as well as underinvestment in perks. We also demonstrate that perks may actually harm the agent, although perks per se are enjoyable for the agent. Moreover, we explore how discretion influences the provision of perks and show the robustness of our results.

JEL Classification: D82, J3, M52.

Keywords: Compensation, Perks, Agency Model, Moral Hazard.

*Bonn Graduate School of Economics and Max Planck Institute for Research on Collective Goods, Kurt-Schumacher-Str. 10, 53113 Bonn, Germany, weinschenk@coll.mpg.de, Phone ++49 (0)228 91416-33, Fax ++49 (0)228 91416-62. I thank Oliver Hart, Martin Hellwig, and Vikrant Vig, as well as seminar participants at the Max Planck Institute and the Asian Meeting of the Econometric Society in Seoul for helpful comments and suggestions. I thank colleagues at Harvard University for their hospitality during my visit.
1 INTRODUCTION

Compensation of employees can not only be purely monetary, but may also contain non-monetary ingredients. These so called perks are indeed a common form of compensation, especially for executives. Despite its prominence, few papers explore perks formally. This paper provides a simple framework to study investments in perks and to examine their welfare effects.

We built a principal-agent model with moral hazard and nonmonetary compensation (perks) as well as monetary compensation. Our main insights are the following. First, even though perks are contractible, their provision may be inefficient. Interestingly, there can be over- as well as underinvestment in perks. Second, perks may actually harm the agent, in the sense that the agent would be better off if the principal did not provide perks.

The intuitions for these results are interrelated. In our model, perks motivate the agent to exert effort and thereby allow the principal to cut back monetary incentives. If perks are closely related to work (i.e., if the complementarity between effort and perks is high), investing in perks allows the principal to cut back monetary compensation so much that this wage-reduction effect overcompensates the consumption-benefit effect. Therefore, the net effect of perks on agent’s utility can be negative. This holds despite that perks per se are enjoyable for the agent.

The reasons why the provision of perks can be inefficient—although perks

\[1\] In Grinstein, Weinbaum, and Yehuda’s (2009) random sample of 361 firms belonging to the S&P 1500 Index, for the years 2006-2007, 90% of firms provide perks to their top five executives and the mean annual value is $296,300.
are contractible—are as follows. The principal seeks to maximize her own well-being. Especially, she does not take into account the consequences of her actions on the agent’s well-being. Thus, the principal may buy perks that benefit her and harm the agent. Therefore, if perks are closely related to work, the principal may overinvest in perks. The principal may also underinvest. We show that underinvestment can occur if perks are barely related to work, i.e., if perks are beneficial for the agent also on a net basis.

One may criticize our base model because it does not capture that, in reality, agents often have discretion and exploit their discretion to get perks. Moreover, this discretion may be the very reason why the level of perks is inefficient. Our reply to this critique is twofold. First, our model shows that investments in perks may be inefficient even if we abstract from discretion. This finding clarifies that discretion is not necessary for inefficiency. Second, we extend our model by assuming that the agent has the discretion to take perks—at the expense of the principal—when there is insufficient monitoring. Interestingly, regarding the question whether the investment in perks is efficient or not, our aforestated results stay completely valid. We also show that discretion can cause a commitment problem: If perks harm the agent, the agent would like to commit to not exploiting the discretion he has, but this is not feasible.

Related Literature.— There is a long-lasting debate whether perks are overprovided or not. One group of researchers (e.g., Jensen and Meckling 1976, Grossman and Hart 1980, Hart 2001, Bebchuk and Fried 2003, 2004, and Yermack 2006) argues that agents exploit the discretion they have to get perks. This is beneficial for them, but harmful for the principal and detri-
mental for welfare. This view suggests that too many perks are consumed. A second group (e.g., Fama 1980, Henderson and Spindler 2005, Rajan and Wulf 2006, Marino and Zábojník 2008a, and Oyer 2008) reasons that perks are useful instruments to align the objectives of principals and agents. In their view, perks can be a cheap way to motivate agents to work hard and are hence part of an optimally designed contract. This view suggests that the investments in perks are efficient. We contribute to this debate by showing that the provision of perks can be inefficient, even if agents have no discretion. Moreover, we show that perks may not only be overprovided, but that there are also scenarios where they are underprovided.

Also, Oyer (2008) and Marino and Zábojník (2008a) examine perks which are complementary to effort. In Oyer (2008), there is no moral hazard and compensations are only nonmonetary. Marino and Zábojník (2008a) study how perks improve the tradeoff between incentives and insurance that determines the optimal incentive contract. They consider—as we do—monetary as well as nonmonetary compensations and there is moral hazard. In contrast to us, they assume that the agent’s liability is unlimited. As a consequence, when designing a contract, the principal effectively maximizes the total expected surplus. Therefore, the principal’s investments in perks are always socially optimal, given the implemented effort level (see especially their arguments on p. 570). Moreover, in such a framework, perks are neutral for the agent’s well-being, given that the principal sets wages optimally: regardless of the level of perks, the agent’s expected utility equals his reservation utility. Limited liability is therefore a key factor for our results. We think that limited liability is highly reasonable if legal constraints restrict transfers from the agent to the principal or if the agent’s wealth and her possibility
to take credits are bounded. Limited liability imposes a constraint which is more demanding for the principal, the higher the informational rent earned by the agent is, i.e., the harder it is to measure the agent’s performance.

Marino and Zábojník (2008b) consider an environment where employees have private information about their preferences and outside opportunities. To screen the employees, the firm optimally provide different bundles of perks and salary. Canidio and Gall (2012) show that perks can be useful in a model of career concerns and multiple tasks to increase the opportunity costs of tasks which are more visible than others.

The paper proceeds as follows. In Section 2, we present the base model, which is then analyzed in Section 3. In Section 4 we offer two interesting extensions. We conclude in Section 5.

2 THE BASE MODEL

The base model—which we present below—is deliberately kept simple. We later offer an array of extensions and robustness checks, see especially Appendix B.

There are two risk-neutral parties, a principal (she) and an agent (he). One can think of the agent as an employee and the principal as a firm owner. The agent exerts noncontractible effort \( e \in \{0, 1\} \) where 0 indicates shirking and 1 working. Working causes private costs for the agent of \( c > 0 \), whereas shirking is costless.

The agent’s compensation is monetary as well as nonmonetary. Monetary compensation depends on performance. Performance is good, \( G \), or bad,

\[2\text{In Appendix B, we let effort be a continuous decision variable of the agent.}\]
The probability of good performance is \( p(e) \). Working increases the probability of good performance: \( 0 < p(0) < p(1) < 1 \). The agent earns wage \( w_S \), with \( S \in \{B, G\} \). The agent’s liability is limited to his wealth, which we normalize to zero. Therefore, wages have to be nonnegative: \( w_S \geq 0 \) for all \( S \in \{B, G\} \). To guarantee that the agent participates if the contract obeys limited liability, we suppose that the agent’s reservation payoff is zero.\(^3\)

Nonmonetary compensation takes the form of perks. We suppose that the principal can invest in perks or not and this is contractible; alternative structures (especially continuous investments in perks) are explored in later sections. Perks cause costs of \( k > 0 \) for the principal and increase the agent’s utility by \( v(1) \) if he works and by \( v(0) > 0 \) if he shirks. We define \( \Delta v := v(1) - v(0) \) and assume that effort and perks are complements in the agent’s utility function: \( \Delta v > 0 \).\(^4\) The idea is that perks make exerting effort more enjoyable. We suppose that \( c > \Delta v \), which ensures that perks alone are not sufficient to motivate the agent to work; at least some monetary incentives are necessary.

The principal receives a gross profit of \( \pi(S) \), with \( S \in \{B, G\} \). We assume that \( \pi(G) \) is sufficiently high so that the principal optimally hires the agent and wants to implement that the agent works.

The timing is as follows:

1. The principal suggests a contract \( C = (w_B, w_G, P) \), with \( w_B, w_G \geq 0 \) and \( P \in \{\text{perks, no perks}\} \).
2. If the agent accepts, the game continues; if he rejects, the game ends

\(^3\)This assumption is standard; see Laffont and Martimort (2001, Chapters 4 and 5).

\(^4\)If effort and perks are not complementary in the agent’s utility function (i.e., if \( \Delta v \leq 0 \)), the principal never invests in perks.
and parties receive their reservation payoffs.

3. The principal invests according to $C$ and the agent chooses effort $e$.
4. Performance $S$ realizes and the wage is payed according to $C$.

Investments in perks cannot be contingent on performance. This is especially reasonable if the agent consumes perks while exerting effort, i.e., before the performance realizes.

It is useful to interpret the ratio $p(1)/p(0)$ as the precision of the performance measure. The more precise the measure is, the less important are random factors, and the higher is $p(1)/p(0)$. The ratio $v(1)/v(0)$ is interpreted as the work-relatedness of perks. It measures the complementarity between effort and perks.

3 ANALYSIS

In this section, we first solve the principal’s problem. Because we are interested in the socially optimal investment in perks, we then solve the utilitarian planner’s problem. By comparing the solutions, we can determine when the principal under- or overinvests in perks. We then provide an intuition by exploring the agent’s well-being. Finally, we study the effects of perks on welfare and provide some comparative statics.

3.1 PRINCIPAL’S PROBLEM

The agent will only choose to work if his expected utility from working is at least as high as the one from shirking. Without perks the incentive

\footnote{To avoid open set problems, we impose the standard assumption that the agent chooses to work in case of indifference.}
constraint is thus
\[ p(1)w_G + (1 - p(1))w_B - c \geq p(0)w_G + (1 - p(0))w_B. \]  
(1)
This can be rewritten as
\[ \Delta p \Delta w \geq c, \]  
(2)
where \( \Delta p := p(1) - p(0) \) and \( \Delta w := w_G - w_B \).

The principal maximizes her expected profit. A necessary condition for profit maximization is that she minimizes the expected wage payment subject to the incentive and the limited liability constraint. Holding \( w_B \) fixed, cost minimization requires that the good performance is remunerated as low as possible, given the incentive constraint. Therefore, \( w_G = w_B + c/\Delta p \).

It is then cost-minimizing not to remunerate bad performance. Hence, the principal optimally sets
\[ w_B = 0 \text{ and } w_G = \frac{c}{\Delta p}. \]  
(3)

The principal’s expected wage payment is then
\[ E[w|\text{no perks}] = \frac{p(1)c}{\Delta p}. \]  
(4)
With perks, the incentive constraint changes to
\[ \Delta p \Delta w \geq c - \Delta v. \]  
(5)
Arguments similar to the ones above yield that the principal optimally sets
\[ w_B = 0 \text{ and } w_G = \frac{c - \Delta v}{\Delta p}. \]  
(6)
Her expected wage payment is then
\[ E[w|\text{perks}] = \frac{p(1)(c - \Delta v)}{\Delta p}. \]  
(7)
The complementarity between effort and perks allows the principal to cut back monetary compensation, which saves the principal

\[ \frac{p(1)\Delta v}{\Delta p} > 0. \]  

(8)

The principal buys perks if and only if they cost up to the amount which the principal saves in expectation on wages:

\[ k \leq \frac{p(1)\Delta v}{\Delta p}. \]  

(9)

3.2 PLANNER’S PROBLEM

To have a benchmark for the principal’s investment decision, suppose now that a utilitarian planner decides about perks. The planner buys perks if and only if their social costs do not exceed their social benefits. The planner does not care about wage payments, because these are just transfers between the risk-neutral parties. Hence, the planner buys perks if and only if they do not cost more than their consumption utility:

\[ k \leq v(1). \]  

(10)

If the planner has perfect information, the optimal provision of perks can be enforced. This is, however, not realistic; a perfectly informed planner should rather be seen as a thought experiment which allows us to determine whether the principal under- or overinvests in perks.

3.3 COMPARING THE SOLUTIONS

Examining (9) and (10) yields that the principal’s willingness-to-pay for perks (WTP), \( p(1)\Delta v/\Delta p \), exceeds the one of the planner, \( v(1) \), if and only

\[ \text{For our results it is not important how cases of indifference are solved.} \]

\[ \text{Note that this result holds whether the planner is able to contract on effort or not.} \]
if
\[ \frac{v(1)}{v(0)} > \frac{p(1)}{p(0)}. \] 

(11)

Then, from the planner’s perspective, the principal’s investment is either efficient or too high. Overinvestment occurs for \( k \in (v(1), p(1)\Delta v/\Delta p) \).

The principal’s WTP falls short of the one of the planner if and only if
\[ \frac{v(1)}{v(0)} < \frac{p(1)}{p(0)}. \] 

(12)

Then, the principal’s investment is either efficient or too low. Underinvestment occurs for \( k \in (p(1)\Delta v/\Delta p, v(1)) \).

Only if \( \frac{v(1)}{v(0)} = \frac{p(1)}{p(0)} \) are the principal’s and the planner’s incentives to invest in perks perfectly aligned and principal’s investment is efficient for all costs \( k \).

**Proposition 1:** The principal never underinvests and may overinvest in perks if the work-relatedness of perks, \( v(1)/v(0) \), is higher than the precision of the performance measure, \( p(1)/p(0) \). The results reverse if the work-relatedness of perks is lower than the precision of the performance measure.

Put differently, the principal invests weakly more [less] in perks than a planner would, if the work-relatedness of perks is higher [lower] than the precision of the performance measure. In Appendix B, we show that if investments in perks are a continuous variable, the relationships are strict. Figure [II] illustrates Proposition [I].

### 3.4 INTUITION AND AGENT’S WELL-BEING

To gain intuition, it is useful to determine the agent’s well-being. Given that the principal sets wages optimally, the agent’s expected utility without
Figure 1: Comparing the principal’s and the planner’s investments.

The additional expected utility due to perks is hence

$$v(1) = \frac{p(1) \Delta v}{\Delta p}.$$  

The additional expected utility is not necessarily positive. It is readily verified that it is positive if (12) holds, while it is negative if (11) holds. Intuitively, perks that are closely related to work allow the principal to cut back
monetary compensation so much that this wage-reduction effect overcompensates the consumption-benefit effect.\footnote{This holds if the work-relatedness of perks is sufficiently high or the performance measure is sufficiently imprecise. The reason therefore is that, if the work-relatedness of perks is high, perks are very effective means to substitute monetary incentives. If the performance measure is very imprecise, \(w_G\) is huge; so if perks allow for a reduction of \(w_G\) even only by a moderate fraction, this leads to a large reduction of the expected wage payment.}

**Proposition 2**: Perks harm [benefit] the agent if they are closely [barely] related to work, i.e., if \(v(1)/v(0) > [<]p(1)/p(0)\).

This provides an intuition for Proposition \(I\). The principal does not take into account the agent’s well-being when deciding about investments in perks. Consequently, if perks harm the agent the principal never underinvests and may overinvest in perks. In contrast, if perks benefit the agent the principal never overinvests and may underinvest.

3.5 DO PERKS RAISE WELFARE?

Suppose the principal provides perks. Is this beneficial for welfare? If perks are barely related to work, \(v(1)/v(0) < p(1)/p(0)\), then we know from Proposition \(I\) that the principal never overinvests and may underinvest. Therefore, whenever the principal provides perks, this is beneficial for welfare. Similarly, if \(v(1)/v(0) = p(1)/p(0)\), perks at least weakly beneficial for welfare.

In contrast, if perks are closely related to work, \(v(1)/v(0) > p(1)/p(0)\), then the principal never underinvests and may overinvest. If perks cost sufficiently little, \(k < v(1)\), perks again improve welfare. Perks are neutral for welfare if \(k = v(1)\). However, if perks costs are higher, \(k \in (v(1), p(1)\Delta v/\Delta p)\),
then the principal buys perks although this deteriorates welfare.

The aforementioned results are opposite to the common wisdom that one has to be concerned if an agent consumes perks that are barely related to work, but not if they are closely related.9

3.6 COMPARATIVE STATICS

How do the principal’s investments in perks change if we vary specific parameters?

Perk Costs.— The higher are the perk costs, $k$, the smaller is the set of parameters where the principal invests in perks, cf. (9).

Precision of the Performance Measure.— We can rewrite (9) as

$$1 - \frac{\Delta v}{k} \leq \frac{p(0)}{p(1)}.$$  (16)

It is apparent that the more precise the performance measure is, the smaller is the set of parameters where the principal invests in perks. Intuitively, more precision makes monetary incentives more attractive for the principal, while perks become relatively less attractive.

Like Marino and Zábojník (2008a), our model therefore predicts that investments in perks are (at least weakly) decreasing in the precision of the performance measure. Because performance measurement tends to be noisier in large firms, cf. Schaefer (1998), large firms should provide more perks. This is consistent with the empirical evidence (Oyer 2008, Rajan and Wulf 2006).

9See, for example, the recent Wall Street Journal (2011) article or Rajan and Wulf (2006).

10This can also be seen in Figure 1: a more precise measure lowers the slope of the principal’s WTP-curve.
Perk Utilities. — As can be seen from (16) or Figure 1, increasing \( v(0) \) or decreasing \( v(1) \) shrinks the set of parameters where the principal invests in perks. Intuitively, if perks have a low work-relatedness, they are less attractive for the principal, because they allow her to cut back monetary compensation only little.

4 EXTENSIONS

We next offer two interesting extensions. In Section 4.1, we let the agent have discretion to take perks—at the expense of the principal—when there is insufficient monitoring. In Section 4.2, we allow that also the agent can buy perks. Note that Appendix B contains five robustness checks. We consider (i) productivity-enhancing perks, (ii) menus of perks, (iii) continuous investments in perks, (iv) continuous effort, and (v) a richer signal space.

4.1 THE MODEL WITH AGENT DISCRETION AND MONITORING

One may criticize our base model because it does not capture that, in reality, agents often have discretion and exploit their discretion to get perks. Moreover, this discretion may be the very reason why the level of perks is inefficient. Our reply to this critique is twofold. First, our base model shows that the investments in perks may be inefficient even if we abstract from discretion. This clarifies that discretion is not necessary for inefficiency. Second, we modify the base model by incorporating discretion.

The base model assumes that the principal has perfect control over perks. Suppose instead now that the agent has the discretion to take perks—at the expense of the principal—when there is insufficient monitoring by the principal. We have to extend the time structure of the base model slightly.
1. The principal suggests a contract $C = (w_B, w_G, P, M)$, with $w_B, w_G \geq 0$, $P \in \{\text{perks, no perks}\}$, and $M \in \{\text{monitoring, no monitoring}\}$.

2. If the agent accepts, the game continues; if he rejects, the game ends and parties receive their reservation payoffs.

3. The principal invests according to $C$ and the agent chooses effort $e$.

4. The agent can take perks if and only if there is no monitoring and the principal has not bought perks.

5. Performance $S$ realizes and the wage is payed according to $C$.

Monitoring causes costs for the principal of $m \geq 0$, whereas not monitoring is costless. We assume that if the agent takes perks, this causes the same costs of $k$ for the principal as if the principal buys the perks herself.

In Sections 4.1.1 and 4.1.2, we show that discretion does not change the conflict between the principal and the planner. In Section 4.1.3 we explore how discretion influences parties’ well-being and welfare.

4.1.1 EQUILIBRIUM

We can reduce the complexity of the principal’s problem by the following insights. First, because perks deliver a positive gross benefit to the agent, the agent takes perks whenever the principal does not buy perks and there is no monitoring. Second, since monitoring is costly, it makes no sense for the principal to monitor and invest in perks. Third, not monitoring and investing in perks is equivalent to not monitoring and letting the agent take perks. These three insights allow us to reduce the principal’s problem to the decision whether (i) to monitor and not to invest in perks or (ii) not to monitor and let the agent take perks.

From Section 3 we know that to motivate the agent to work the principal
optimally sets $w_B = 0$ and $w_G = c/\Delta p$ in case (i) and $w_B = 0$ and $w_G = (c - \Delta v)/\Delta p$ in case (ii). Hence, the principal prefers to let the agent take perks if and only if the perks cost less than the expected saving in the monetary compensation plus the saved monitoring costs:

$$k \leq p(1)\frac{\Delta v}{\Delta p} + m. \quad (17)$$

Recognize that (17) coincides with (9) for $m = 0$. That is, for the limit case $m = 0$ the model with discretion equals the one without discretion.

From (17) we see that the higher $m$ is, the larger is the set of parameters where the principal does not monitor and let the agent take perks. Thus, the agent’s discretion weakly raises perk consumption whenever monitoring is costly, $m > 0$, which we assume henceforth.

4.1.2 IS THE PRINCIPAL’S MONITORING ACTIVITY WELFARE-MAXIMIZING?

Ignoring fixed terms, if there is monitoring and no perks utilitarian welfare is $-m$ whereas it is $v(1) - k$ without monitoring and with perks. Then, to maximize welfare, it is optimal to let the agent take perks via not monitoring if and only if

$$v(1) \geq k - m; \quad (18)$$

otherwise, monitoring is optimal. Comparing (17) and (18) with (9) and (10), respectively, we see that the only effect discretion has is that the net costs of perks, $k - m$, instead of the gross costs, $k$, matter for the principal as well as for the planner. We therefore get the following insights.

**Proposition 3:** Discretion does not change the conflict between the principal and the planner.
This result especially implies that Proposition 1 stays valid. Thus, whether the agent has discretion or not is unimportant for when there is under- or overinvestment in perks.

4.1.3 HOW DISCRETION INFLUENCES PARTIES’ WELL-BEING AND WELFARE

Although discretion does not change the conflict between the principal and the planner, it may influence parties’ payoffs as well as welfare.

Principal’s Well-Being. — Because monitoring is costly, the principal is weakly worse off with discretion.

Agent’s Well-Being. — From Proposition 2 we know that the agent benefits from perks if these are barely related to work. Because discretion weakly raises perk consumption, the agent is thus weakly better off when he has discretion and perks are barely related to work. The result is vice versa if perks are closely related to work. If worse off, the agent would like to commit to not exploiting his discretion, but this is not credible (i.e., it is not subgame-perfect).

Welfare. — Discretion may motivate the principal to let the agent take perks, although this is not efficient. More surprisingly, discretion can also increase welfare. From Proposition 1 we know that the principal may underinvest in perks. Introducing discretion, the principal may decide to let the agent take perks in such a case, which improves welfare. A corollary of this result is the following: lower monitoring costs, which can be interpreted as a better corporate governance, may actually impair welfare.

11Here, we study the effects of introducing discretion. In Proposition 3 and its preceding analysis, we take discretion as given and explore when the principal over- or underinvests in perks.
Example 1.— Suppose $p(1) = .6$, $p(0) = .4$, $v(1) = 1$, and $v(0) = .8$. Let $k = .9$ so that it is beneficial for welfare if the principal let the agent take perks by not monitoring. From (17), we get that the principal monitors if and only if $m < .3$. Hence, welfare is higher with $m \geq .3$ than with $m < .3$.

4.2 AGENT CAN BUY PERKS

Up to now, we have assumed that the agent cannot buy perks. There are several reasons why this is plausible. First, the agent initially has no wealth and therefore cannot buy perks. This argument ties in nicely with the common explanation why the principal and the agent form a relationship: the agent lacks resources which the principal has and so the agent cannot work on his own, while the principal is not able or willing to exert effort herself. Second, there are several agents and perks are a public good; hence, if there are sufficiently many agents, no agent has an incentive to invest in perks. Third, it is more expensive for the agent to buy perks than it is for the principal; it is then not worthwhile for the agent to invest in perks (cf. Oyer 2008).

Suppose now that, nonetheless, the agent is also able to buy perks. This can be reasonable if the agent possesses wealth and his liability is limited because of some legal constraints or because his wealth is hidden to other parties. We consider two different timings. See Appendix A for a detailed analysis.

**Proposition 4:** If the agent can buy perks before the principal, perks may be over- or underprovided. If the agent can buy perks after the principal, there is never underprovision, but there may be overprovision.

The reason why there can be overprovision is the same as in the base
model, where the agent cannot buy perks: perks that are closely related to work harm the agent and may therefore be overprovided. In fact, overprovision occurs for the same parameter set as in the base model where the agent cannot buy perks (see Appendix A).

The reason why underprovision can occur if the agent can buy perks before the principal is as follows. First, the principal is not willing to buy perks if they are barely related to work. Second, the agent does not buy perks, although he knows that the principal will not buy perks either and perks cost less than the utility they deliver, because of the following hold-up problem: when the agent buys perks the principal will cut back wages, which dilutes the agent’s incentive to buy perks in the first place. See the proof of Proposition 4 and the illustrative example below.

Finally observe that for both timings, if the costs of perks are sufficiently low, the first-moving party has an advantage: she/he knows that the second-moving party will buy perks when she/he does not buy perks. Then the first-mover decides not to buy perks and save the investment costs.

Example 3.— Suppose that the agent can buy perks before the principal, \( p(1) = .6, p(0) = .4, v(1) = 1, \) and \( v(0) = .8 \). Perks allow the principal to cut back wages and thereby reduce the expected wage payment by .6; cf. (8). Hence, the principal only buys perks, given that the agent has not bought perks, if \( k \leq .6 \). Thinking about buying perks, the agent takes into account that the principal will cut back wages when there are perks. Hence, the agent only buys perks, given that the principal will not buy them when

\[^{12}\text{This effect is especially plausible in reality if perks are a durable good. Also note that the parameter set where perks are underprovided is smaller if the agent can buy perks than if he cannot (see Appendix A).}\]
he does not buy them, if they cost not more than the perk utility of \( v(1) = 1 \) minus the expected reduction of the wage payment of \( .6: k \leq .4 \). Hence, if perks cost between \(.6\) and \(1\) nobody will buy perks, although this would improve welfare.

5 CONCLUSION

We provide a simple agency model with moral hazard and show that investments in perks are not necessarily efficient, even though investments are contractible. Over- as well as underinvestment in perks is possible. The principal tends to overinvest in perks if these are closely related to work and to underinvest if these are barely related to work. Interestingly, this conclusion stays completely valid if the agent has discretion. We also demonstrate that perks may harm the agent, although perks per se are enjoyable for him. Thus, while some perks may seem a luxury at first glance, they can actually be a poisoned gift.

APPENDIX A: PROOF OF PROPOSITION 4

TIMING 1: AGENT CAN BUY PERKS BEFORE THE PRINCIPAL

Suppose that the agent can decide to buy perks before the principal (and before parties conclude the contract). If the agent has not invested in perks, it is optimal for the principal to invest if and only if \( (9) \) holds. Given that the principal will invest, the agent optimally does not invest, to save costs \( k \).

Suppose next that \( (9) \) does not hold. Is it optimal for the agent to invest? The agent faces a hold-up problem: when he buys perks the principal will cut back wages, see \( (3) \) and \( (6) \), which dilutes the agent’s incentive to buy
perks in the first place. Taking this into account, it is optimal for the agent to invest if and only if perks cost the same or less than the perk utility $v(1)$ minus the cut in the expected wage payment:

$$k \leq v(1) - \frac{p(1)\Delta v}{\Delta p}.$$  

(19)

So perks will be bought by one of the parties if and only if

$$k \leq v(1) - \frac{p(1)\Delta v}{\Delta p} \text{ or } k \leq \frac{p(1)\Delta v}{\Delta p}.$$  

(20)

If perks are closely related to work—i.e., if $v(1)/v(0) > p(1)/p(0)$—the principal’s willingness-to-pay of $p(1)\Delta v/\Delta p$ is higher than the equilibrium utility of perks $v(1)$. Therefore, the principal may overinvest in perks. If $v(1) - \frac{p(1)\Delta v}{\Delta p} < v(1)$ and $p(1)\Delta v/\Delta p < v(1)$, there is underinvestment.

**TIMING 2: AGENT CAN BUY PERKS AFTER THE PRINCIPAL**

Consider next the alternative timing where the agent can buy perks after the principal bought perks or not (and after parties conclude the contract).

Suppose the principal buys no perks. Then (i) for $k \leq v(0)$ it is always optimal for the agent to buy perks, (ii) for $k \in (v(0), v(1)]$ it is only optimal for the agent to buy perks if he works, and (iii) for $k > v(1)$ it is never optimal for the agent to buy perks. We next examine these three cases in more detail.

**Case (i):** $k \leq v(0)$. The principal knows that the agent will buy perks when she buys none; hence, she does not buy perks and sets $w_B = 0$ and $w_G = (c - \Delta v)/\Delta p$; cf [6]. So perks are provided in equilibrium by the agent and this is also in the planner’s interest because $k \leq v(1)$.

**Case (ii):** $k \in (v(0), v(1)]$. Given that the principal has not bought perks, the agent buys perks and works if and only if this is at least weakly
better than not buying perks and shirking:

\[ \Delta p \Delta w - c - k + v(1) \geq 0. \quad (21) \]

Because the principal wants the agent to work, she then optimally sets

\[ w_B = 0 \text{ and } w_G = \frac{c + k - v(1)}{\Delta p}. \quad (22) \]

This results in expected wage costs for the principal of

\[ \frac{p(1)(c + k - v(1))}{\Delta p}. \quad (23) \]

Alternatively, the principal may decide to buy perks herself and set wages according to (6). Then her expected costs are

\[ \frac{p(1)(c - \Delta v)}{\Delta p} + k. \quad (24) \]

Comparing (23) and (24) reveals that the principal is better off by buying the perks herself if and only if

\[ k > \frac{p(1)}{p(0)} v(0). \quad (25) \]

Whether the principal decides to buy the perks herself or not, one party will end up buying perks. Perks are in the planner’s interest because \( k \leq v(1) \).

Case (iii): \( k > v(1) \). The agent will not buy perks, but the principal may buy them. She buys them if and only if \( k \leq p(1) \Delta v/\Delta p \), cf. (9). Perks are not in the planner’s interest because \( k > v(1) \).

We conclude. Cases (i) and (ii) reveal that perks are never underprovided. Case (iii) demonstrates that perks may be overprovided. \( \square \)

**APPENDIX B: ROBUSTNESS**

We offer five robustness checks. First, we assume that perks have productivity-enhancing effects. Second, we suppose that there are several types of perks.
Third, we let investments in perks be a continuous decision variable of the principal. Fourth, we suppose that the agent’s effort is continuous. Fifth, we consider a richer signal space.

**PRODUCTIVITY ENHANCING PERKS**

In the base model, the principal benefits from perks only indirectly via a lower monetary compensation necessary to motivate the agent. Suppose now that perks also have direct benefits for the principal. We capture this by assuming that the principal’s gross payoff is higher with perks than without: $\pi(S, \text{perks}) > \pi(S, \text{no perks})$, for $S \in \{B, G\}$. That is, perks raise the productivity of the agent in making each level of performance more valuable. Thus, by investing in perks, the principal’s expected gross profit increases by

$$p(e) (\pi(G, \text{perks}) - \pi(G, \text{no perks})) + (1 - p(e)) (\pi(B, \text{perks}) - \pi(B, \text{no perks})) =: \Omega > 0. \quad (26)$$

Therefore, the principal buys perks if and only if

$$k \leq p(1) \Delta v \Delta p + \Omega. \quad (27)$$

That is, buying perks is optimal if the costs of perks fall short of the expected saving in wages plus the additional expected gross profit due to the productivity-enhancing effects of perks. The latter effects alone may be sufficient to make investing in perks profitable for the principal (formally, then $k < \Omega$).

Regarding over- and underinvestments in perks, we get the following insights. The utilitarian planner buys perks if and only if

$$k \leq v(1) + \Omega. \quad (28)$$
Comparing (27) and (28) reveals that productivity-enhancing effects of perks—which are captured via \( \Omega \)—do not change the conflict between the principal and the planner.

**DIFFERENT TYPES OF PERKS**

Suppose that the principal can select between different perks. This case is isomorphic to a model where the principal can determine the characteristics of perks, i.e., where the characteristics are endogenous. For concreteness, suppose that the principal can choose to buy no perks, perks of type \( I \), or perks of type \( II \). The principal buys perks of type \( I \) if and only if

\[
\frac{p(1)\Delta v^I}{\Delta p} - k^I \geq \max \left\{ 0, \frac{p(1)\Delta v^{II}}{\Delta p} - k^{II} \right\},
\]

whereas the planner buys perks of type \( I \) if and only if

\[
v^I(1) - k^I \geq \max \left\{ 0, v^{II}(1) - k^{II} \right\}.
\]

Similarly, the principal buys perks of type \( II \) if and only if

\[
\frac{p(1)\Delta v^{II}}{\Delta p} - k^{II} > \max \left\{ 0, \frac{p(1)\Delta v^I}{\Delta p} - k^I \right\},
\]

whereas the planner buys perks of type \( II \) if and only if

\[
v^{II}(1) - k^{II} > \max \left\{ 0, v^I(1) - k^I \right\}.
\]

**Proposition 5:** The principal chooses the same type of perks as the utilitarian planner if either (29) and (30) or (31) and (32) hold, or (29) and (32) do not hold. Otherwise, the principal chooses different types of perks than the utilitarian planner.

\(^{13}\)How cases of indifference are solved is not important for our results.
Looking at (29)-(32) yields the following insights. First, the principal as well as the planner like cheap perks. Second, the principal likes perks that are closely related to work. These perks allow the principal to cut back monetary incentives to a large extent. Third, and in contrast, the planner likes perks which yield a high equilibrium perk utility for the agent. Therefore, the principal’s interests need not be aligned with those of the planner.

Each party may prefer either perks of type $I$, type $II$, or no perks. When the principal as well as the planner prefer perks of type $I$, then the principal’s choice maximizes utilitarian welfare. The same is true if both parties prefer perks of type $II$ or both prefer no perks. However, the principal’s choice need not be welfare-maximizing. The principal might prefer perks of type $I$ or $II$, while the planner prefers no perks; then the principal overinvests in perks. Vice versa, the principal might prefer no perks, while the planner prefers perks of type $I$ or $II$; then the principal underinvests in perks. Finally, the principal might prefer perks of type $I$ ($II$), while the planner prefers perks of type $II$ ($I$).

CONTINUOUS INVESTMENTS IN PERKS

Suppose that investments in perks are a continuous decision variable of the principal. Denote the principal’s investments in perks by $I$, with $I \in \mathbb{R}^+$. Let the agent’s utility from perks be $V(I,e)$ and define $\Delta V(I) := V(I,1) - V(I,0)$.

Assumption 1: Suppose that (i) $V(0,e) = 0$ for all $e$, (ii) $0 \leq V'(I,0) < V'(I,1)$ for all $I$, (iii) $V''$, $\Delta V''(I) < 0$, (iv) $\lim_{I \to \infty} V'(I,1) = 0$, and (v) $V'(0,1) > 1$. 
In words, (i) says that the utility from perks is zero if there are no perks; (ii) expresses that the marginal (and therefore also the absolute) utility from perks is higher if the agent works and not shirks; (iii) and (iv) guarantee that for the principal as well as for the planner a unique optimal investment level exists; (v) makes sure that the planner finds a positive level of perks optimal.

Given some \( I \), the principal optimally sets \( w_B = 0 \) and \( w_G = (c - \Delta V(I))/\Delta p \), cf. (6). She minimizes the expected wage payment plus the investment:
\[
\min_I p(1) \frac{(c - \Delta V(I))}{\Delta p} + I, \tag{33}
\]
which leads to the first-order condition
\[
\frac{p(1) \Delta V''(I)}{\Delta p} = 1. \tag{34}
\]
If \( p(1) \Delta V'(0)/\Delta p \leq 1 \), then the principal optimally invests zero; otherwise the optimal investment is positive and solves (34).

The utilitarian planner maximizes the agent’s equilibrium utility from perks minus the investment:
\[
\max_I V(I, 1) - I, \tag{35}
\]
which leads to the first-order condition
\[
V'(I, 1) = 1. \tag{36}
\]
Denote the solution by \( I^{SP} \), which is positive due to Assumption (v).

\(^{14}\)Note that if Assumption (v) does not hold the planner invests zero in perks. If simultaneously \( p(1) \Delta V'(0)/\Delta p > 1 \) the principal’s investment is positive and she overinvests.
We are interested in whether the principal invests more or less into perks than the planner. Evaluating (34) at $I^{SP}$ and using (36), yields

$$\frac{p(1)\Delta V'(I^{SP})}{\Delta p} = \frac{p(1)(1 - V'(I^{SP},0))}{\Delta p} \geq 1. \quad (37)$$

If this inequality holds with $>$, then only a $I > I^{SP}$ equates (34). That is, the principal invests more than the planner. If (37) holds with $<$, the principal invests less. Only if (37) holds with equality, the principal invests the same amount.

**Proposition 6:** The principal overinvests [underinvests] in perks if

$$\frac{\Delta V'(I^{SP})p(1)}{\Delta p} > [<]1.$$

The results are qualitatively the same as in our base model where perks are binary: the principal overinvests in perks if the (marginal) work-relatedness of perks is sufficiently high or the performance measure is sufficiently imprecise. The results we found here are even stronger: generically, the principal either under- or overinvests.

**Continuous Effort**

The agent’s utility from choosing effort $e \in \mathbb{R}^+$ is

$$p(e)w_G + (1 - p(e))w_B + V(P,e) - c(e), \quad (38)$$

where $v(P,e)$ denotes the benefit experienced from consuming perks. Just as in the case with binary effort we normalize

$$V(P,e) = \begin{cases} v(e) & \text{with perks,} \\ 0 & \text{without perks.} \end{cases} \quad (39)$$
The complementarity between effort and perks is captured via \( v' > 0 \). We also assume that \( v'(e) < c'(e) \), so that monetary incentives are always needed to implement positive effort.

Suppose the principal wants to implement \( \hat{e} \). The incentive constraint is

\[
p'(\hat{e}) \Delta w = c'(\hat{e}) - v'(\hat{e}) \tag{40}
\]

with perks and

\[
p'(\hat{e}) \Delta w = c'(\hat{e}) \tag{41}
\]

without perks. In both cases it is optimal to set \( w_B = 0 \). Hence,

\[
w_G = \begin{cases} 
\frac{c'(\hat{e}) - v'(\hat{e})}{p'(\hat{e})} & \text{with perks,} \\
\frac{c'(\hat{e})}{p'(\hat{e})} & \text{without perks.} 
\end{cases} \tag{42}
\]

Just as in the case with binary effort, the principal trades off the benefit of investing in perks—namely the lower monetary compensation needed—with the costs of investing in perks. She buys perks if and only if

\[
k \leq \frac{p(\hat{e}) v'(\hat{e})}{p'(\hat{e})}, \tag{43}
\]

while the planner buys perks if and only if

\[
k \leq v(\hat{e}). \tag{44}
\]

Recognize that (43) and (44) are just the continuous versions of (9) and (10), respectively. Therefore, the conflict between the principal and the utilitarian planner does not change.

A RICHER SIGNAL SPACE

We have assumed that the performance measure has just two possible realizations. What happens if more realizations are possible? Demougin and
Fluet (1998) show that, in moral hazard problems with limited liability and risk neutrality of parties, all relevant information from the performance measure can be summarized in a binary statistic. Therefore, the model where the performance measure has only two realizations is a reduced form of the general model. More specifically, with many realizations it is optimal only to reward the performance with the highest likelihood ratio. Call this performance good performance. All other performances can be summarized as bad performance.

REFERENCES


Henderson, Todd M. and James C. Spindler (2005). Corporate Heroin: A Defense of


[http://online.wsj.com/article/SB100014240527487033551304576260871791710428.html](http://online.wsj.com/article/SB100014240527487033551304576260871791710428.html)