

Why Employment Agreements (Should) Favour Those at the Top

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Abstract

I take an efficient contracting approach to the question of how much "job protection" to offer employees, in particular those at the top of organizations. Given their privileged information or formal authority, senior managers who are *not* given such protection are likely to take opportunistic actions that make them less dispensable. The optimal employment relationship trades off the resulting inefficiencies from such "self-made" job security with the reduced incentives and higher compensation costs that arise from explicit employment protection. One implication of the model is that more senior managers, such as CEOs, should receive both higher rents and more protection, e.g., through contracts that are explicitly not at-will or that specify a longer duration.

Keywords: Employment agreements; At-will contracts; Contract Duration.

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1 Introduction

In this paper, I solve for the optimal employment contract for an agent who must be remunerated for working hard and who must be incentivized to take decisions in the firm's rather than only his own interest. The key novelty of the analysis is my interest in an often overlooked feature of employment agreements, in particular for more senior employees including CEOs: Contract provisions that offer (more) employment protection, for instance through the explicit stipulation of contract duration.

My main motivation is the recent empirical analysis of CEO employment contracts in Schwab and Thomas (2006). They ask whether CEO contracts are different from the standard "at-will" contracts used for lower-level employees. Their finding (p. 233): "We find much evidence that CEOs are not generally at-will employees". CEOs' agreements offer far more protection, in particular through contracts for a definite term of years (almost 87% of all cases) and additional rights at termination. Schwab and Thomas (2006, p. 233) conclude: "This is quite different from the protections available to other workers, who are generally at-will employees without contracts."

My key finding is that the optimal degree of such employment protection must be chosen in light of the different tasks that an agent faces. In terms of expected compensation, it is cheapest for the firm not to offer any such protection, as this only reduces the agent's incentives to work hard. However, in my model this will negatively impact on the efficiency of decision making. In essence, the respective employee will then use his discretion to take opportunistic actions that make him less dispensable for the firm. Through such "self-made" employment protection the agent protects himself against dismissal or future wage cuts under the threat of dismissal. The key implication is that employees who have more discretion and whose decisions have more impact on firm profits will be given *both* higher compensation, including a higher rent above their market wage, *and* more employment protection. This is not the result of inefficient contracting under a rigged system of governance, where powerful insiders enrich themselves, but it is efficient in light of the different weights that are given to different tasks that employees perform.

My theoretical analysis, based on a simple agency model of multi-tasking, ties into a recent empirical literature that looks into the details of employment agreements, in particular for CEOs. Importantly, for such senior managers legal provisions to protect workers'

rights or agreements with trade unions should all be less important. I also fully abstract from such determinants or constraints of employment agreements in my model. Then, at one extreme of the spectrum of employment agreements that I consider is a contract "at will", for which I stipulate that at any point of time the firm can dismiss the respective employee, providing it with a strong bargaining position in possible renegotiations.¹ At the opposite extreme is a contract that offers full employment protection, so that the respective employee can resist any attempt to renegotiate his wage downwards under the threat of firing. I also consider intermediate cases, where the degree of protection represents a more gradual choice, as achieved, for instance, through contract duration and, thereby, through the "penalty" that a firm would have to pay when dissolving an employment agreement prematurely. (Verkerke (1995, p. 863) notes that, at least for the US, "courts in virtually every American jurisdiction continue to presume that an indefinite term employment contract is terminable at will by either party.")

Gillan, Hartzell, and Parrino (2009) provide another recent analysis of CEO employment agreements. Their focus is different from that of Schwab and Thomas (2006), as they expand the sample to include those CEOs who had no explicit agreement. Their empirical analysis is twofold, identifying both the determinants of when a contract is explicit and the determinants of contract duration under explicit agreements. They interpret their finding in terms of protecting employees from opportunistic behavior by the firm. Employees who have more to lose when their agreements are altered unilaterally should obtain an explicit contract or a contract with longer duration. My take is somewhat different, as I argue that through such explicit employment protection the firm protects *itself* against opportunistic decisions that, in particular, a senior executive could take so as to make himself less dispensable. The role of potential inefficiencies is important. It ensures that the form of the employment agreement is not driven alone by risk sharing motives, which may be of less relevance for wealthy senior executives. In fact, I thus undertake my analysis under the assumption of risk neutrality.

¹ “[E]mployers and employees can avoid a possible charge of breach if they stick to the practice of modifying terms only by mutual consent. ... Mutual agreement on modifications of terms does not preclude wage changes—employees may agree to a wage cut if the alternative is being laid off” (Malcomson, (1997), p. 1921). If the firm tries to renegotiate downwards an employee’s compensation and if the employee rejects the firm’s offer, the firm has two options. It can either continue employment or fire the employee. If employment is continued, the existing wage contract remains in place: “[R]efusal of an offer by either party followed by continued employment leaves the contract unchanged” (Malcomson, (1997), p. 1933).

I use a multi-task agency setting. Though this is in line with the seminal contribution of Holmström and Milgrom (1991), a key difference is that there is only one performance measure, namely output. My focus is not on the determinants of incentive pay but, instead, on a comparison of other contractual provisions relating to employment protection. This is also the key difference to other models of multi-tasking that take, similar to my paper, a sequential structure, most notably Levitt and Snyder (1997), Lambert (1986), or Demski and Sappington (1987). I do not intend to review the vast literature on incentive pay. The "self-made" employment protection, in my model through making oneself less dispensable, is somewhat akin to the notion of "entrenchment" used in several papers, such as Lambert and Larcker (1985), Knoeber (1985), Almazan and Suarez (2003), or Inderst and Müller (2010). Again, the comparison of different types of employment agreements. Finally, I borrow the notion of at-will contracts, which offer no legal protection from the threat of dismissal, from earlier contributions in the labor literature. In contrast to, for instance, the seminal papers by Kahn and Huberman (1988) and Prendergast (1993), my focus is not on employer opportunism but, instead, on the opportunistic behavior of employees. In fact, in my model the employee can protect himself against employer opportunism through making himself less dispensable.

The rest of short paper is organized as follows. Section 2 introduces the baseline model. Sections 3 and 4 derive the optimal contract under two different types of employment agreements. Section 5 compares their performance. Section 6 concludes.

2 The Model

I consider a single agent working for a principal. The agent could be the CEO of a firm, in which case the principal would represent the interest of all owners. Alternatively, the principal could be the company's headquarters dealing with a particular division manager, or any senior manager dealing with a subordinate. I will be more specific about particular applications and the respective empirical implications after presenting the key results.

Tasks and Payoffs. The model has the following timing. Initially, at $t = 1$, the agent is hired. At the final stage $t = 4$ all payoffs are realized. There are two interim periods. In $t = 2$ the agent has to perform two tasks, which I specify next. The agent has to exert effort so as to find ways how to make the firm more profitable. But he also has to exert

discretion in determining whether to change the firm's strategy or that of his business unit, e.g., by introducing new products or making changes to the internal organization. In what follows, to simplify the presentation I will say that the agent, first, should identify a new strategy and, second, has to decide whether to implement a new strategy or whether to retain the existing strategy.²

After the agent made his decisions in $t = 2$ and before payoffs are realized in $t = 4$, in $t = 3$ the initial compensation contract can be renegotiated. Depending on the contractual terms (cf. below), this may also allow for the replacement of the agent. Note for $t = 4$, where payoffs are realized, that I presume that both the firm and the agent are risk neutral. I also abstract from discounting.

If ultimately no new strategy was implemented, the payoff that the agent generates for the firm is equal to $x_h > 0$ with probability $0 < q_0 < 1$. With the residual probability, $1 - q_0$, the payoff is $x_l < x_h$. The specification of only two payoff realizations is common and allows, first, to obtain explicit solutions for the optimal incentive contracts, and, second, to conduct a clear-cut comparative analysis.

From an ex-ante perspective, the profitability of a new strategy is described as follows. The profitability is captured in a parsimonious way by the respective probability q of generating the high outcome $x_h > 0$. I stipulate that $q \in [0, 1]$ is drawn from the distribution function $F(q)$ with everywhere strictly positive density $f(q) > 0$. Generating a new strategy comes at private disutility $c > 0$ for the agent. Whether the agent exerts effort is not verifiable. What is also not verifiable is whether a new strategy was implemented. This is only observable by the principal as an "insider" of the firm.

Dispensability of the Agent. When no new strategy was implemented, the agent is fully replacable. In this case, I stipulate that when hiring a new agent, the firm's profitability in $t = 3$ would remain the same: The firm would realize $x_h > 0$ with probability q_0 . Instead, when the agent implemented in $t = 2$ a new strategy, then he becomes less dispensable. This is the key assumption in my model. For ease of exposition, I stipulate that the agent is then fully indispensable, so that when he is replaced, the likelihood of

²In the language of Aghion and Tirole (1997), the agent thus has both formal and real authority. By giving the agent private information about the profitability of a new strategy, one can show that even if he did not have formal authority, he would end up having real authority with respect to the implementation decision.

realizing the high outcome x_h goes down to zero.

The agent's market wage is given by W . It is independent of the agent's actions. This entails, in particular, that the agent can not "take with him" the strategy that he developed at his present employer.

Employment Agreement. In my baseline analysis I compare two different types of employment agreements. The first is a contract at-will, under which the agent's principal, e.g., the board in case of a CEO, can decide to dismiss the agent in $t = 3$. The second is a contract that offers the agent job protection. In particular, I presently assume that this is complete in the sense that the agent can not be dismissed against his will.

Irrespective of the basic form of the employment agreement, I will allow for the use of incentive contracts. Though I will flesh out below the details under the specific agreements, it is convenient to introduce the basic notation already at this point. A contract can specify a base wage w and, in addition, a bonus b that is paid only for high outcome ($x = x_h$).

3 Contracting under Employment Protection

I presently assume that the firm has no credible threat of dismissing the agent before the final period $t = 4$. Subsequently, I will, instead, consider the opposite case of a contract "at-will", as well as an intermediate case where employment protection can be varied more gradually. Consequently, at present the firm can not credibly instigate contract renegotiations at $t = 3$. I can thus abstract from this stage of the game.³ Then, the original contract (w, b) will stay in place until $t = 4$. As we will see, the contract design problem will now resemble very much that of a standard problem of moral hazard, even though the agent has two tasks to perform in my model.

Define now the expected compensation conditional on the success probability

$$w(q) = w + qb. \tag{1}$$

If the agent has identified a new strategy with success probability q , in $t = 2$ he will thus compare the respective expected compensation $w(q)$ with the expected compensation

³As we will see, given that the agent decides in $t = 2$ whether to exert effort and whether to implement a new strategy, the agent's expected compensation will not fall below his market wage W . The game of renegotiations is thus discussed only in Section 4, where there will be renegotiations with positive probability even on the equilibrium path.

under the original strategy, $w(q = q_0)$. As long as $b \geq 0$, so that the agent has a non-negative stake in the firm's fortunes, the agent will thus optimally choose to implement the new strategy if and only if $q \geq q_0$. That is, the agent's strategy decision is always first-best efficient. As we will see, this will constitute a key difference to the subsequently analyzed case without employment protection.

Next, at the beginning of $t = 2$, the agent decides whether to put in effort so as to generate a new strategy (with random success probability q). This is optimal only if the respective expected payoff

$$F(q_0)w(q_0) + \int_{q_0}^1 w(q)f(q)dq - c$$

does not fall below the expected payoff from shirking, $w(q_0)$. After rearranging terms, this is the case if

$$b \int_{q_0}^1 (q - q_0) f(q)dq \geq c. \quad (2)$$

The incentive constraint requires that the bonus b is sufficiently large so that there is a sufficiently large difference between the expected compensation under a new strategy and the expected compensation under the initial strategy. By optimality, the incentive constraint (2) will be binding, so as to maximize expected firm profits (cf. the proof of Proposition 1). With

$$\pi(q) = x_l + q(x_h - x_l) - w(q),$$

expected firm profits are given by

$$\Pi = F(q_0)\pi(q_0) + \int_{q_0}^1 \pi(q)f(q)dq.$$

And these are thus highest when, from (2), it holds that

$$b = \hat{b} = \frac{c}{\int_{q_0}^1 (q - q_0) f(q)dq}. \quad (3)$$

Given that the agent has a market wage of W and given that he will incur private disutility c , in expectation the employment agreement must promise the agent at least $W + c$. If this is feasible, then the base wage w is adjusted accordingly, which after substitution for $b = \hat{b}$ yields

$$w = \hat{w} = W - \frac{q_0 c}{\int_{q_0}^1 (q - q_0) f(q)dq}. \quad (4)$$

Importantly, note now that when $w = \widehat{w}$ and $b = \widehat{b}$, we have that $w(q_0) = W$ and $w(q) > W$ for all $q > q_0$. Consequently, even the agent can not demand a higher compensation at $t = 3$, as it is not credible for him to threaten to otherwise leave the firm: For all realizations of q his expected compensation does not fall short of his market wage W . Of course, the contract with $w = \widehat{w}$ is only feasible as long as this still gives rise to a nonnegative base wage. Otherwise, it is optimal for the firm to set w as low as possible: $w = 0$. In this case, the agent obtains a rent equal to

$$R = \frac{q_0 c}{\int_{q_0}^1 (q - q_0) f(q) dq} - W. \quad (5)$$

I now summarize the preceding discussion.

Proposition 1 *If the employment agreement offers the agent full protection, thereby ensuring that compensation is not renegotiated at the interim period $t = 3$, then the following characterization applies. The optimal bonus is always $b = \widehat{b}$, as given by (3). When*

$$\frac{q_0 c}{\int_{q_0}^1 (q - q_0) f(q) dq} \leq W, \quad (6)$$

then the optimal base wage equals $w = \widehat{w}$, as given by (4), and the agent does not realize a positive rent. Otherwise, i.e., when condition (6) does not hold, the optimal base wage is $w = 0$, and the agent realizes a strictly positive rent $R > 0$, as given by (5).

The characterization in Proposition 1 ultimately proves to be relatively standard. There is no renegotiation at $t = 3$, so that the agent's expected compensation depends only on the respective success probability q_0 . This implies that there is effectively no agency problem with respect to the task of implementing the best strategy. The residual problem is then one of a standard moral hazard problem (in effort) with limited liability.

Importantly, the firm as the residual claimant thus always realizes the highest possible surplus when the employment agreement offers protection, but the firm may have to leave the agent with a rent. With respect to the agent's rent R , the following comparative analysis is immediate.

Corollary 1 *The agent's rent R is higher when it is more costly to exert effort (higher c) or when effort is less likely to result in a new strategy that is better than the firm's present strategy. The latter holds when the likelihood of success is higher for the present strategy (higher q_0) or when a new strategy is less likely to have success ($F(q)$ decreases in the sense of First-Order Stochastic Dominance).*

4 Contracting under the Threat of Dismissal

In this Section, I consider an employment agreement that does not provide the agent with job protection. Precisely, the agent can be fired at any point of time. Though in equilibrium the agent will not be fired, the credible threat to do so will be used by the employer to keep down the agent's wage. Of course, the threat of firing must be credible, though.

Renegotiations. In $t = 3$, with such an employment agreement renegotiations are possible. I characterize the outcome of these renegotiations first. Recall that at this stage the agent may or may not have implemented a new strategy. This is observable by the employer (albeit not verifiable). When no new strategy was implemented, the agent is fully dispensable: He has not made himself more valuable to the firm than any other "outsider" whom the firm would bring in to replace the agent. Consequently, the equilibrium wage is then simply the market wage of the agent, W . Note that to obtain this result we do not need to specify a particular bargaining protocol. For specificity, though, we may imagine that at this stage it is again the employer who can make an new offer.

The outcome is different when a new strategy was implemented. This is, at least to some degree and at least in the medium term, also irreversible. As this is the agent's "own" strategy, he has thereby made himself less dispensable. In particular, I have specified, for simplicity, that with a new agent the firm would then realize the lowest possible success probability, namely zero. Instead, when the agent is retained, the success probability is q , depending on the particular realization of the success probability. This is common knowledge. What is also common knowledge at this point is thus the agent's expected compensation under the existing agreement, which is given by $w(q)$, as defined previously in (1).

As the agent chooses whether to implement a new strategy, in this case it will trivially hold always that $w(q) \geq W$. Further, whenever q is such that

$$\pi(q) \geq x_l - W, \tag{7}$$

then the threat of firing the agent is not credible for the employer. In this case, I stipulate that the existing "at will" agreement remains in place (cf. the discussion in the Introduction, notably footnote 1). Precisely, when either the agent or the employer wants to

obtain a larger "share of the pie", the counterparty could simply refuse to renegotiate the contract, knowing that employment would continue under the existing agreement as this is in both parties best interest.

If (7) does not hold, the threat of firing is credible. If $q > 0$, it is, however, efficient to retain the agent. Though I argue in what follows that the outcome at this node of the game will not prove important, to be specific I still stipulate that the firm makes the offer. Consequently, the agent will be paid only W . I have thus derived the following results.

Lemma 1 *Under an employment agreement that does not protect the agent from dismissal, renegotiations in $t = 3$ lead to the following outcome:*

- i) When the agent did not implement a new strategy, his compensation will always equal his market wage W .*
- ii) When the agent implemented a new strategy with profitability q , then the existing agreement (w, b) will remain in place whenever condition (7) holds, given that the threat of firing is not credible. Otherwise, the compensation will be renegotiated downwards to W .*

Identifying and Implementing a New Strategy. Suppose now that the agent has identified a new strategy with profitability q . Provided that condition (7) holds, so that his wage will not be renegotiated downwards later, he will then implement the strategy if and only if $w(q) \geq W$. In what follows, I restrict consideration to contracts where the bonus is nonnegative, $b \geq 0$. As will be immediate from the subsequent analysis, this will always hold under an optimal employment agreement. In fact, one of my results will be that $b > 0$ holds strictly. Note also that $w(q) > W$ must hold strictly for *some* q , as otherwise the agent would not have any incentives to search for a better strategy.

In principle, there are now two cases to consider. When $w(q = 0) = w \leq W$, then there exists a cutoff q^* defined by

$$q^* = \frac{W - w}{b}, \tag{8}$$

so that the agent prefers to undertake the new strategy if and only if $q \geq q^*$. Importantly, in this case also condition (7) is satisfied for all $q \geq q^*$: When the agent prefers to undertake the new strategy, then his wage will indeed not be renegotiated downwards. In the second case $w(q) > W$ holds for all q , as $w(q = 0) = w > W$. Then, however, condition (7) does not hold for low q . For brevity's sake I choose now to ignore the second case for now.

It will be evident later that this case would not arise in equilibrium, given that there it always holds that $w < W$.

Lemma 2 *Suppose that the (at-will) compensation contract satisfies $w \leq W$. Then, provided that the agent has identified a new strategy, he will choose to implement it if and only if $q \geq q^*$, where the cutoff q^* solves (8). In this case, his employment agreement (w, b) will also not be renegotiated.*

Given Lemma 1 and Lemma 2, I can now ask when it indeed pays for the agent to incur private disutility c so as to generate a new strategy. Recall that the agent's compensation without a new strategy is simply his market wage W . He also earns the market wage when he identified a strategy but chooses not to implement it, which is the case if $q \leq q^*$. Otherwise, the agent is paid according to the contract (w, b) . After rearranging terms, the agent then finds it optimal to exert effort if and only if

$$\int_{q^*}^1 [w(q) - W] f(q) dq \geq c. \quad (9)$$

Again, the expected compensation *conditional* on that a new strategy is implemented must sufficiently exceed the market wage W . Otherwise, it is not worthwhile for the agent to undertake the respective effort at cost c .

Lemma 3 *The agent only finds it optimal to exert effort at cost c , so as to thereby generate a new strategy, when condition (9) holds.*

Optimal Compensation. The firm seeks to maximize its ex-ante profits:

$$\Pi = \int_{q^*}^1 [\pi(q) - w(q)] f(q) dq + F(q^*) [\pi(q_0) - W]. \quad (10)$$

Note that we use here the agent's optimal cutoff q^* , as obtained from Lemma 2, and that without a new strategy the profitability is given by q_0 . The firm's program is thus to maximize Π subject to the incentive constraint (9) and the constraint that $w \geq 0$.

As is immediate (cf. the proof of Proposition 2), the agent's incentive constraint (9) will again bind by optimality. After substitution into the firm's objective function Π in (10), this transforms to

$$\Pi = \int_{q^*}^1 \omega(q) f(q) dq + F(q^*) \omega(q_0) - (W + c) \quad (11)$$

with

$$\omega(q) = x_l + q(x_h - x_l).$$

In words, the firm as the residual claimant would realize the highest possible profits when the subsequent implementation cutoff q^* maximizes efficiency. This is the case when $q^* = q_0$.

I ask first when the first-best outcome is feasible, so that the highest possible firm profits can be realized. This holds when, using the cutoff-rule (8),

$$q_0 = \frac{W - w}{b} \quad (12)$$

holds together with the binding incentive constraint (9), again evaluated at $q^* = q_0$:

$$\int_{q_0}^1 [w(q) - W] f(q) dq = c. \quad (13)$$

After substituting for $w(\cdot)$, the two conditions (12) and (13) can be solved to obtain for the (at-will) compensation contract the bonus

$$b = \hat{b} = \frac{c}{\int_{q_0}^1 (q - q_0) f(q) dq} \quad (14)$$

and for the base wage

$$w = \hat{w} = W - \frac{q_0 c}{\int_{q_0}^1 (q - q_0) f(q) dq}. \quad (15)$$

The choice of $b = \hat{b}$ and $w = \hat{w}$ together would ensure that the agent, first, exerts effort so as to generate a new strategy and, second, implements the new strategy if and only if it is efficient. The agent does not realize an ex-ante rent in this case. He only realizes a compensation $w(q) > M$ for all $q > q^*$, while $w(q^* = q_0) = M$, so that he indeed chooses the efficient cutoff-rule.

The bonus is strictly positive, $b = \hat{b} > 0$. In fact, the two objectives of incentivizing the agent to exert effort and inducing him to implement a new strategy when this is efficient could not be jointly achieved when $b = 0$, so that the agent was paid a fixed wage. However, the first best may not be attainable, which is the case when $\hat{w} < 0$. Note here first that it always holds that $\hat{w} < W$, as I assumed for Lemma 2. When the first-best contract stipulates that $\hat{w} < 0$, this is not feasible, given the constraint that $w \geq 0$. Thus, in this case the optimal (at-will) employment agreement can not be made

sufficiently steep. Intuitively, it is then optimal to choose the base wage as low as possible, $w = 0$, and adjust the bonus b until the incentive constraint (9) just binds. (The left-hand side of (9) is strictly increasing in b , taking into account also the agent's optimal adjustment of q^* .) Then, however, the resulting cutoff q^* will be inefficiently low: $q^* < q_0$. The compensation that the agent must obtain in expectation so as to exert effort in the first place will then distort his decision whether to implement a new strategy. So as to ensure himself the respected wage $w(q)$, rather than being paid only his market wage W , the agent inefficiently often implements his own strategy. Put differently, under the optimal at-will contract, which does not give him employment protection, the agent will then generate his "self-made protection", namely by making himself more indispensable through implementing his own strategy.

Proposition 2 *The unique optimal ("at-will") employment agreement where the firm retains the right of dismissal is characterized as follows. If*

$$\frac{q_0^c}{\int_{q_0}^1 (q - q_0) f(q) dq} \leq W, \quad (16)$$

then the agreement specifies a base wage $w = \hat{w}$ and a bonus $b = \hat{b}$, as characterized in (12) and (13). In this case, the agent exerts effort and implements a new strategy if and only if this is efficient: $q \geq q^ = q_0$. When (16) does not hold, the base wage is set as low as possible, $w = 0$, while the optimal bonus b is set so that the incentive constraint (9) just binds. In this case, the agent implements a new strategy inefficiently often, $q^* < q_0$, so as to thereby ensure himself a higher compensation by making himself less dispensable.*

Proof. Observe first that if the first best is feasible, implying by construction also that all of the surplus goes to the firm, then it is indeed uniquely optimal to choose the respective contract (w_{FB}, b_{FB}) . This is the case if condition (16) holds.

Suppose now that this does not hold. Observe first that from optimality the incentive constraint (9) must still hold with equality. If this was not the case, then the firm would be better off by adjusting the contract as follows. When still $w > 0$, then while leaving q^* unchanged, the firm could adjust downwards both b and w , which would unambiguously improve profits. When $w = 0$ and the incentive constraint is slack, which as (16) does not hold implies that $q^* < q_0$, the firm would be strictly better off by adjusting b downwards, which would also bring up q^* .

If (16) does not hold, the optimal bonus, together with the resulting cutoff q^* , uniquely solves

$$b = \frac{c}{\int_{q^*}^1 (q - q^*) f(q) dq} \quad (17)$$

together with (8) for q^* . From substituting now $b = W/q^*$, given that $w = 0$, we have for q^* the requirement that

$$W \int_{q^*}^1 \left[\frac{q}{q^*} - 1 \right] f(q) dq = c. \quad (18)$$

Q.E.D.

The tension between the agent's two tasks becomes stronger as the firm must pay a higher expected compensation to elicit effort, given that c increases. By the same token, a decrease in the expected profitability of a new strategy (from an ex-ante perspective) exacerbates the incentive conflict. I capture this, as for Corollary 1, through a First-Order Stochastic Dominance (FOSD) shift in the ex-ante distribution $F(q)$ (namely, a corresponding decrease). Also, when the market wage is lower, then the incentives for the agent to make himself indispensable are higher.

Corollary 2 *Under the optimal ("at-will") employment agreement, where the firm retains the right of dismissal, it is more likely that the strategy choice is distorted (or, likewise, that it is distorted more) when*

- i) it is more costly for the agent to exert effort (higher c);*
- iii) effort is less likely to result in a strategy that is better than the firm's present strategy, given that the likelihood of success is higher for the present strategy (higher q_0) or a new strategy is less likely to have success ($F(q)$ decreases in the sense of First-Order Stochastic Dominance);*
- iii) or incentives for the agent to make himself more indispensable are higher as his market wage is lower (lower W).*

Proof. Consider first condition (16). It is immediate that this is relaxed when c decreases, q_0 decreases, $F(q)$ increases in the sense of FOSD, or W increases. Note that all comparative results thus hold strictly for condition (16).

Next, consider q^* when condition (16) does not hold. The comparative results then follow from implicit differentiation of equation (18) in the proof of Proposition 2. In

particular, note that the left-hand side of equation (18) is strictly increasing in q^* and W , while it strictly increases following a FOSD in $F(q)$; the right-hand side is strictly increasing in c . Note finally that here q_0 does not affect q^* , so that in this respect the assertion holds only weakly. **Q.E.D.**

Discussion. The focus of this paper is on a comparison of different employment agreements that offer various degrees of job protection. Nevertheless, also the form of the characterized (on-the-job) pay, (w, b) , deserves some comments. Under the optimal at-will contract, it is the threat of dismissal that disciplines the agent to undertake effort so as to, thereby, generate a new strategy. To satisfy the respective incentive constraint (9), the contract (w, b) only has to generate a sufficiently high *expected* compensation. The form of the compensation, namely incentive pay with $b > 0$, is dictated by the second objective, namely to ensure that the agent does not undertake a new strategy inefficiently often.

5 Comparison

I now compare the employment agreements characterized in Propositions 1 and 2.

First Best. The first observation is that the respective condition when the first best can be obtained without leaving a rent to the agent is the same in both cases (cf. expressions (6) and (16)). In this case, also the choice of the base wage and that of the bonus are the same, namely $b = \hat{b}$ and $w = \hat{w}$, given that the respective expressions in (3)-(4) and (14)-(15) coincide. This is at first remarkable, given that the incentive component serves two different purposes under the two considered employment agreements. With employment protection, $b = \hat{b} > 0$ is necessary so as to induce the agent to exert effort. With an agreement at-will, $b = \hat{b} > 0$ serves the purpose of subsequently inducing an efficient strategy choice, while the threat of dismissal provides incentives for the agent to exert effort. A difference also between the compensation components arises, however, when conditions (6) and (16) are no longer satisfied.

Second Best. Now the compensation differs under the two considered agreements. With employment protection, we know that always $b = \hat{b}$. Instead, when (16) does not hold, the bonus is strictly higher under the at-will contract: $b > \hat{b}$. In both cases, however, the base

wage is still the same, as it is chosen as low as possible: $w = 0$. Still, the employee is worse off under the at-will contract, as with positive probability he will be forced to accept a downwards adjustment of his compensation, namely to W . As a consequence, while under the at-will contract he does not receive a rent, the employee otherwise realizes a strictly positive (ex-ante) rent $R > 0$. The drawback for the firm under an at-will contract is a loss in efficiency, which equals

$$L = \Delta \int_{q^*}^{q_0} (q_0 - q)f(q)dq \text{ with } \Delta = x_h - x_l.$$

With this at hands, the comparison of firm profits between the two alternative agreements is straightforward. The firm strictly prefers the contract at-will if and only if $L < R$, so that the loss in surplus is smaller than the rent that is left to the agent. Bringing out this trade-off is the key contribution of this paper.

There is one immediate implication that arises from this comparison. Note that the loss in surplus is strictly higher when there is more at-stake from the agent's decision, as Δ is higher. Note also that the realized cutoff q^* does not depend on Δ . Also the rent R under the alternative agreement is independent of Δ . Consequently, we know that it is strictly optimal for the firm to protect the employee from the threat of dismissal and, thereby, against a downwards renegotiation of his wage when Δ is sufficiently large. This key observation accords well with the motivating discussion in the Introduction. Arguably, CEOs and other senior executives are more likely to have discretion over decisions that have a large effect on firm profits. If these employees make inefficient decisions so as to thereby generate "self-made" protection, namely by making themselves less dispensable, then the loss in firm profits far outweighs the benefits that an at-will contract would offer in terms of a lower compensation. Employees higher up in an organization's hierarchy would thus enjoy, according to the prediction of my model, both an additional "rent" (over and above their market wage) *and* contractual provisions that protect them against dismissal. I discuss below how such provisions could also be given more gradually.

I kept the model simple so as to clearly isolate the trade-off that is at heart of my argument. This arguably reduces the scope for comparative results. Furthermore, from the observations in Corollary 1 and Corollary 2 we know that both the rent R and the loss in surplus L are affected in the same way by some of the key parameters of the model. That is, both the agent's rent under employment protection and the loss in efficiency

under an at-will contract are higher when it becomes harder to incentivize the agent to exert effort (higher c , higher q_0 , FOSD decrease in $F(q)$). This holds likewise for a variation in the agent's market wage W , so that a decrease in W increases both the necessary rent and the inefficiency. That being said, there is one interesting difference between the two employment agreements. Suppose that the respective condition for the first best, i.e., (6) and (16), is *just* not satisfied. By construction, the resulting loss in efficiency is then still small. More formally, the first-order effect from $q^* < q_0$ is zero when we start from the efficient outcome. On the other hand, the first-order effect from an increase in the agent's rent is always strictly positive. To be more precise, we could consider, for instance, an increase in effort c , starting from the value at which, ceteris paribus, the first-best condition is just satisfied. Then, for small enough variations, we can unambiguously say that the at-will contract dominates. Below I will show that by this argument, when the firm can offer employment protection more gradually, then the firm would never want to go "all the way" to fully protect the employee against dismissal.

Proposition 3 *The two types of employment agreements, as characterized in Propositions 1 and 2 compare as follows. When the firm can realize the maximum feasible profits, then this is possible under either employment regime, given that the respective conditions (6) and (16) coincide. Otherwise, the firm faces a trade-off between leaving the agent with a rent under employment protection ($R > 0$) or facing inefficient decisions under a contract at-will ($L > 0$). Employment protection is always strictly better (with $L > R$) when the decision is sufficiently important as Δ is sufficiently large. On the other hand, the employment will always be at-will when distortions remain sufficiently small, as then the first-order effect from a higher rent dominates the respective effect from a lower surplus.*

Proof. The comparison when the first best is feasible follows from the discussion in the main text. This holds also for the comparative analysis in Δ . Finally, for the case with small distortions, I consider a marginal change starting from parameter values at which conditions (6) and (16) hold with equality. The analysis holds irrespective of the respective change in parameters (i.e., an increase in c or q_0 , a decrease in $F(q)$ in the sense of FOSD, or a decrease in W). I consider thus only a marginal increase in c . Then, we have from the characterization in Proposition 2 that $dL/dc = 0$, given that we undertake the analysis at

$q^* = q_0$. Instead, from Proposition 1 we have

$$\frac{dR}{dc} = \frac{c}{\int_{q_0}^1 (q - q_0) f(q) dq} > 0.$$

Q.E.D.

Gradual Employment Protection. The empirical literature that I discussed in the Introduction considers more gradual variations in employment protection (for senior executives and CEOs), such as the duration of an employment agreement. The longer is the stipulated duration, the higher is the penalty that the firm incurs when it dismisses an employee, given that it must compensate the agent for the foregone compensation. Another possibility would be the use of severance pay.

In what follows, I do not want to elaborate on the specificities of a particular way how an employee is protected from the threat of dismissal. Therefore, I simply stipulate that the firm incurs a penalty P , which accrues to the employee, when it fires the employee. The respective extension of the analysis, where now $P \geq 0$ constitutes an additional choice variable, is straightforward. I can thus be brief.

The key difference is now that renegotiations at $t = 3$ will leave the agent at least with a compensation worth $W + P$. This is thus also what the agent can realize even when shirking. Consequently, the agent now realizes a rent that is exactly equal to P . This is costly for the firm, so that $P > 0$ is optimally chosen only if it has benefits. These benefits arise from more efficient decision making (provided that the first best is not feasible with $P = 0$, as condition (16) holds). Through setting $P > 0$ while increasing the bonus $b > 0$, the firm ensures that the employee's incentives not to shirk remain intact, while the cutoff q^* is pushed up. (Note that $w = 0$.) Provided that the respective program is quasiconcave (cf. the proof of Proposition 4), it is immediate to extend the insights from Proposition 3 as follows.

Proposition 4 *Suppose that the firm can grant employment protection more gradually, namely through a "penalty" $P \geq 0$ that it pays in case of a dismissal (e.g., through a longer agreed contract duration). Then the optimal value of P is higher when the decision is more important as Δ is higher. Further, provided that the first best is not feasible as (16) does not hold, even under the optimal value of P the decision is still inefficient ($L > 0$ as $q^* < q_0$.)*

Proof. With $P \geq 0$, the cutoff q^* is determined by

$$q^* = \frac{M + P}{b}, \quad (19)$$

while it is equally straightforward to extend the incentive constraint (9) to obtain

$$\int_{q^*}^1 [w(q) - W - P] f(q) dq \geq c. \quad (20)$$

After substituting from (19) into the binding constraint (20), we still have that b is determined by (17). As $P > 0$ will only be chosen when condition (16) does not hold, so that optimally $w = 0$, we have in analogy to expression (18) that q^* solves

$$(W + P) \int_{q^*}^1 \left[\frac{q}{q^*} - 1 \right] f(q) dq = c. \quad (21)$$

Finally, substituting the binding constraint (20) into firm profits Π , expression (11) extends to

$$\Pi = \int_{q^*}^1 \omega(q) f(q) dq + F(q^*) \omega(q_0) - (W + P + c) \quad (22)$$

I now differentiate Π with respect to P while using dq^*/dP from implicit differentiation of (21). This yields the first-order condition $\frac{d\Pi}{dP} = 0$:

$$f(q^*) \Delta (q_0 - q^*) \frac{q^*}{M + P} \frac{\int_{q^*}^1 (q - q^*) f(q) dq}{\int_{q^*}^1 q f(q) dq} = 1. \quad (23)$$

Note first that this implies that $q^* < q_0$, provided that this holds also for $P = 0$ as condition (16) does not hold. Further, note that, for given P , q^* is independent of Δ . When the objective function is strictly quasiconcave, we can thus see from implicit differentiation of the first-order condition (23) that $dP/d\Delta > 0$, implying also that $dq^*/d\Delta > 0$. **Q.E.D.**

6 Concluding Remarks

This paper is motivated by recent empirical findings that document that, at least in some jurisdictions, employees further up a firm's hierarchy may not only enjoy higher pay, but also more protection against dismissal. In my model, I combine two tasks that an agent may perform: He has to exert effort, as in a standard model of moral hazard, and he also has to exert discretion in making a decision in the firm's interest.

My key comparative analysis is with respect to the importance of this decision, in terms of gained or lost profits that a better or worse decision generates for the firm. In the baseline analysis I compare two different forms of employment agreements. One agreement protects the agent against dismissal and, thereby, against the employer's attempts to renegotiate down his compensation in the future under the threat of dismissal. Instead, under an "at-will" agreement, no such protection is given to the agent. The key trade-off between these two arrangements is as follows. A contract at-will provides "cheaper" incentives for the agent to work hard. Specifically, I show that the agent then never receives a rent above his market wage. Such a rent may, however, be paid under a contract that offers employment protection. With such protection, the incentives to work hard must arise exclusively from the incentive component of the agent's compensation. Instead, incentives to work hard are provided from the threat of dismissal if the contract is at-will.

A contract at-will, while being "cheaper" at first glance, has the drawback of leading to less efficient decisions. Ultimately, the agent is then induced to make opportunistic decisions that make him less dispensable for the firm, thereby protecting him against dismissal or, likewise, against a lower (renegotiated) compensation in the future. In other words, the agent then substitutes for formal employment protection by creating "self-made" protection through making it more costly for the firm to replace him. I identify conditions when for the firm the losses in inefficiency are more important than the gains due to a lower compensation. In particular, this is the case when, as noted above, the decision is more important. Then, the respective employee both receives a rent and additional employment protection.

My model is very stylized so as to isolate the trade-off between rent extraction and efficiency in the simplest possible way. For this purpose, I have also abstracted from risk aversion, for instance. As discussed above, there may be various ways how a firm can offer employment protection more gradually, for instance through the length of a stipulated contract duration. Again, I have only offered a first, stylized analysis of this. Future work may provide more structure to the model, so as to derive in more detail the *jointly* optimal components of efficient employment agreements, rather than focusing only on (incentive) pay.

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