An Income-Satiation Model of Efficiency Wages

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Abstract

Efficiency wages are wages that exceed a worker's reservation wage. A standard explanation for such wages is "bonding": by increasing the worker's fear of discharge, high wages increase the worker's cost from punishment. A neglected alternative is "satiation": by decreasing the worker's marginal utility of income, the high wage decreases the benefit from misbehavior. Satiation, unlike bonding, applies even in a one-period model, but it relies on the misbehavior having a monetary benefit and on at least part of the punishment being nonmonetary.

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I. INTRODUCTION

In efficiency wage models, self-interested employers pay workers more than their reservation wages despite the pressure of a competitive labor market. The idea has been traced back to Adam Smith, who said:

> ... Fourthly, the wages of labour vary accordingly to the small or great trust which must be reposed in the workmen.
>
> The wages of goldsmiths and jewellers are everywhere superior to those of many other workmen, not only of equal, but of much superior ingenuity, on account of the precious materials with which they are intrusted.
>
> We trust our health to the physician: our fortune and sometimes our life and reputation to the lawyer and attorney. Such confidence could not safely be reposed in people of a very mean or low condition. Their reward must be such, therefore, as may give them that rank in society which so important a trust requires.[1]

The idea turns up today not only in the academic literature of efficiency wages, but in the advice of management consultants such as Mark Lipman:

> Of course, there are employees you could pay three times as much and they'd still steal; but generally speaking less stealing goes on in plants where people are overpaid than in plants where they are underpaid. You've got to make an employee feel that this job is worth keeping, that he can't earn more elsewhere.
>
> So control number one, I tell my clients, is to pay a good wage. I make a lot of clients angry by saying this, and some tell me to my face that they prefer to accept the existing rate of theft, that they will simply make up the loss out of employee paychecks; for as long as the stealing goes on, nobody gets a raise.[2]

Why would a high wage make workers more obedient? Numerous explanations have been put forward based on such things as moral hazard, labor

turnover, adverse selection, fairness, and even nutrition; a useful collection of these can be found in the volume edited by Akerlof and Yellen (1986). Perhaps the best known explanation is the bonding model found in, for example, Becker & Stigler (1974) and Lazear & Moore (1984), in which the employer pays a high wage so that the worker's loss from being fired deters misbehavior. The present article proposes a different explanation, which has so far gone unmentioned in the literature: that the worker who is paid more desires additional income less, and is less tempted to acquire it by illegitimate means such as stealing from his employer. This, the "satiation" model, differs from the bonding model because higher pay reduces the benefit from misbehavior rather than increasing the cost.

The satiation model relies on a feature common to many agency problems: at least part of the misbehavior's reward is monetary and at least part of its punishment is not. Agency models are usually constructed in terms of worker effort, a nonmonetary argument of worker utility, but the passage above from Adam Smith, quoted so often by economists in the agency literature, focusses on trust, not effort. Theft from employers, theft from customers, and bribe-taking are important problems, and if stealing cannot be prevented the agent may become unemployable even at a zero wage, since his marginal product can easily be negative.

Employee theft is important because criminality is not confined to a few anti-social individuals. Tillman (1987) finds that 34% of white males and 66% of black males who turned 18 in 1974 in California were arrested within the next eleven years, not including arrests for drunk driving, public drunkenness, and possession of small amounts of marijuana. Large numbers of petty criminals enter the workforce, and there is much evidence that employee theft is a major concern for employers. Dickens, Katz, Lang & Summers (1989, pp. 332, 335) refer to various sources that claim employee theft costs American business between $15 and $56 billion per year and induces spending of $12 billion per year on prevention. Lipman & McGraw (1988) report that in 1984 bank employees stole $382 million, nine times more than bank robbers, that insider theft is a factor in one-third of bank failures, and that employee theft causes 5 to 30 percent of business failures in general. Clark and Hollinger (1985) interviewed employees in several cities and asked them about various forms of misbehavior, a survey which gives some indication of what agency

problems are important. As Table 1 shows, many agency problems add to the worker's wealth, not to his leisure.

TABLE 1 GOES HERE

The model of this paper will show how the special properties of employee theft make high wages a potential solution to this agency problem. Section 1 will lay out a one-period model based on decreasing marginal utility of income—the satiation model. Section 2 will extend the model to two periods and compare it with the standard bonding model. Section 3 discusses the model's implications, and Section 4 concludes.

II. THE ONE-PERIOD SATIATION MODEL

An employer in a competitive labor market offers wage w to a worker who chooses whether to steal or not steal an amount v. The employer detects the theft with probability α, in which case the worker retains the wage and the theft amount but incurs a utility cost p consisting of criminal penalties. If the worker is fired or chooses not to work, he earns the reservation wage w_0. The worker's payoff is his utility $U(x)$ from wage and theft income x, minus the disutility of detection, αp. The function $U(x)$ is assumed to be such that the worker's marginal utility of income is diminishing and he strongly wishes to avoid zero income: $U' > 0$, $U'' < 0$, and $x \overset{lim}{\to} \infty\ U'(x) = 0$. The employer's payoff is the worker's output minus the wage and the cost of theft, $c(v)$. Assume that the punishment is not enough to deter theft if the wage equals the reservation wage:

$$U(w_0 + v) - \alpha p > U(w_0). \tag{1}$$

Proposition 1: *The employer can deter theft by paying a wage w^* that sufficiently exceeds the reservation wage. w^* increases with the amount that might be stolen, v, and decreases in the probability and magnitude of punishment, α and p.*

Proof: Viewed at the start of the game, the worker's alternative expected payoffs are

$$EU(theft) = U(w + v) - \alpha p \tag{2}$$

and

$$EU(honesty) = U(w), \tag{3}$$

or $EU(unemployment) = U(w_0)$, if the worker chooses to be unemployed. To deter theft, equations (2) and (3), the payoffs from theft and honesty, must be equal:

$$U(w + v) - \alpha p = U(w), \tag{4}$$

which gives

$$D = U(w + v) - U(w) - \alpha p = 0. \tag{5}$$

Since $U'' < 0$, the expression $[U(w + v) - U(w)]$ is diminishing in w, and since $x \overset{lim}{\to} \infty\ U'(x) = 0$, theft can indeed be deterred for a big enough w.

Moreover, the participation constraint is not binding, because, comparing (1) and (5), the facts that $U'' < 0$, and that (5) is an equation rather than an inequality, mean that $w^* > w_0$, in which case the honest worker receives more than the reservation utility.

Differentiating (5) gives $dD/dw^* = U'(w+v) - U'(w) < 0$, since $U'' < 0$. The comparative statics results in the proposition follow from implicit differentation, since $dD/dv = U'(w+v) > 0$, $dD/d\alpha = -p < 0$, and $dD/dp = -p < 0$.
Q.E.D.

Proposition 1 seems quite straightforward, but its assumptions are not so simple as they seem. The key assumption is that the marginal utility of income is decreasing in income but the marginal disutility of punishment is not. This assumption is plausible for punishments such as criminal penalties or social stigma: it says that the disutility is the same or greater, not less, for a rich worker. In the model above, the assumption took the form of a utility function concave in income and separable in income and punishment, where rich and poor suffer the same disutility from a given jail term.

Grossman and Hart (1983) point out that if money and effort are not separable in an agency model, the participation constraint may not be binding. If effort's disutility falls with income, the principal may wish to pay the worker a higher wage. The two inputs into utility in the satiation model, money and punishment, are separable, but one might imagine instead that higher income increased the disutility of punishment, which would provide a separate reason for efficiency wages, one operative even if utility were to be linear in money. One could also interpret the satiation model as a Grossman-Hart model in which the utility function is not separable in money and the effort of refraining from theft. If we let q represent the probability of refraining from theft, the worker's expected utility can be rewritten as $EU(q,w) = qU(w) + (1-q)[U(w+v) - \alpha p]$, which has the non-zero cross-partial derivative $\partial^2 U/(\partial q \partial w) = U'(w) - U'(w+v)$. In this interpretation, a higher wage reduces the marginal disutility of refraining from theft.

If the punishment were monetary—a criminal fine, or the loss of wages that the employer had contracted to pay the worker— the assumption would

generally be false, because the rich man would be more willing to incur the punishment.[3] The satiation model fails under some, but not all, risk-averse utility functions when punishments are monetary. The model's conclusions would continue to hold even when the punishment is monetary if risk aversion increased fast enough in wealth, so the higher wage reduces the marginal utility of theft income more than it reduces the marginal disutility from the criminal fine. If the utility function is concave enough, the worker, on being paid 100 dollars extra wages, becomes more reluctant to risk a 500-dollar fine to steal 1,000 dollars. Ito & Takatoshi (unpublished) note something similar in a different context: if researchers have *declining* absolute risk aversion, then increasing their salaries can be desirable because it makes them more willing to take risks in their research.[1]

The term αp represents the nonmonetary punishment. Its most straightforward interpretation is as the expected disutility of a prison sentence, but fear of imprisonment is not the only deterrent to crime. αp could also represent the expected value of the stigma and shame that follows wrongdoing when it is discovered, or the guilt that follows even when it remains concealed. The admission that ethical principles affect behavior does not exclude the usefulness of economic analysis, because economics is about tradeoffs, and the fact that an employee feels guilty when he steals does not imply he will not steal, only that the amount must be large enough to justify the emotional cost. The satiation model points out that if the emotional cost is independent of income, the richer worker will steal less.

Indeed, if there is an emotional cost to theft, employers would take advantage of it by hiring workers with higher costs and attempting to increase them after hiring takes place. Chapter 3 of Frank (1988) points out that the acquisition of a conscience can be viewed as a way to make wrongdoing more costly; employers vulnerable to theft would tend to hire workers who give external signs of possessing consciences. Akerlof (1983) similarly points out that parents improve the financial prospects of their children by instilling them with moral principles. Once a worker has a conscience, external incen-

[1] Another explanation for why the poor commit more crimes is given by Lott (1990): they are liquidity constrained, so if they have some immediate desire to spend, they may resort to theft. Even if the penalty is monetary, if it comes later in time, it may be viewed as the repayment of an involuntary loan.

tives such as monitoring or efficiency wages become more effective. Indeed, the fact that a criminal record evinces lack of conscience makes criminal stigma a powerful non-government deterrent to crime. Coleman (1990) notes that even if workers lack consciences when they enter the firm, the firm has an incentive to provides consciences along with other forms of training. Socialization consists of internalizing norms, providing the individual with an internal sanctioning system which provides punishment when he carries out an action proscribed by the norm. As Coleman puts it, "Deciding whether internalization of a norm in another actor is rational must involve balancing the cost of bringing about the internalization to a given degree of effectiveness against the discounted future cost of policing to bring about the same degree of compliance" (Coleman, 1990, pp. 159, 294). The rational employer will equate the returns at the margin from socializing his workers and from paying them efficiency wages.

Proposition 1 says that a high wage can deter theft, but whether it is profitable to do so is a separate question. Recall that in the passage quoted earlier, some of Mr. Lipman's customers "prefer to accept the existing rate of theft" when he tells them "to pay a good wage." The employer will deter theft only if the cost of the theft is greater than the wage premium; that is, if

$$c(v) \geq w^* - \underline{w}, \tag{6}$$

where $\underline{w}$, the "theft-tolerating wage," satisfies the participation constraint

$$U(\underline{w} + v) - \alpha p = U(w_0). \tag{7}$$

The theft-tolerating wage is less than the reservation wage, because the job provides not only the legitimate wage $\underline{w}$, but the opportunity to steal v.

One might think that paying a wage premium to deter theft could be attractive for the employer only if the theft is not a pure transfer— that the theft must cost the employer more than it benefits the employee.[4] This intuition has considerable truth to it, because if the employer cost $c(v)$ increases, inequality (6) is more likely to apply. But it can also apply even if $c(v) \leq v$, because the theft creates the additional cost of αp. The employer cannot lower the wage by the full amount v unless this additional cost is eliminated by blocking governmental punishment and assuring the workers they need feel no guilt over their actions.[5] If this is done, then "theft" is the wrong

word to describe the worker's behavior, just as "shirking" is the wrong word to apply to the lunch breaks of workers paid annual salaries.

A numerical example may help to clarify the relationship between v and $c(v)$. Let the utility of income be $U(x) = 1 - e^{-x}$, the value of theft be $v = 1$, the cost to the employer be $c(v) = v = 1$ (a simple transfer), the probability of detection be $\alpha = 0.4$, the punishment be $p = .5$, and the reservation wage be $w_0 = 1$.[6] This will not deter theft, because $1 - e^{-(w_0+v)} - \alpha p > 1 - e^{-w_0}$, $(.66 > .63)$. The employer has two choices: to pay a low wage and endure theft, or to pay a high wage and deter it. If he chooses to endure theft, the wage can be lower than $w_0 = 1$, because the worker also has theft income; it solves $1 - e^{-(\underline{w}+v)} - \alpha p = 1 - e^{-w_0}$ and equals $\underline{w} = .78$. If the employer wishes to deter theft, the wage must solve $1 - e^{-(w^*+v)} - \alpha p = 1 - e^{-w^*}$, which gives $w^* = 1.15$. Since a wage increase of .37 deters a theft of 1, the employer will choose to pay the efficiency wage. Note that w_0 is uninvolved in the calculation of the efficiency wage, and $w^* > w_0 > \underline{w}$.

III. THE TWO-PERIOD SATIATION MODEL

The satiation model does not require more than a single period, but it is useful to examine what happens with two periods. This inevitably brings in the bonding effect, since workers who are paid more than the reservation wage in the second period to deter stealing in that period will be reluctant to risk their job by stealing earlier. Assume that there are two periods of work, in each of which theft might occur and be detected. Assume also that there is no discounting, no commitments can be made by the worker or the employer, and the worker cannot borrow to smooth his consumption.

Proposition 3: *In the two-period satiation model, there is no stealing in either period, the second-period wage is higher than the first-period wage and the reservation wage, and the average lifetime wage exceeds the reservation wage:* $w_0 < \frac{w_1^* + w_2^*}{2} < w_2^*$.

Proof: Section 1 showed what would happen in the second period, since the subgame consisting of the second period is equivalent to the one-period model. Proposition 1 implies that w_2^* equals the w^* that solves equation (5),

that $w_2^* > w_0$, and that stealing does not occur in the second period. Viewed from the start of the game, the lifetime expected payoff from stealing in the first and not the second period is

$$[U(w_1 + v) - \alpha p] + [(1 - \alpha)U(w_2^*) + \alpha U(w_0)], \tag{8}$$

and the expected payoff from not stealing in either period is

$$U(w_1) + U(w_2^*). \tag{9}$$

If theft is to be deterred in the first period, the payoffs from equations (8) and (9) must be equal, so

$$U(w_1 + v) - \alpha p + (1 - \alpha)U(w_2^*) + \alpha U(w_0) = U(w_1) + U(w_2^*), \tag{10}$$

which gives

$$U(w_1 + v) - U(w_1) - \alpha p - \alpha[U(w_2^*) - U(w_0)] = 0. \tag{11}$$

Given the assumptions on $U(x)$, by choosing w_1 large enough equation (11) can be satisfied, and theft can indeed be deterred in the first period.

Equation (11) combines with (5) to give

$$[U(w_1 + v) - U(w_1)] - [U(w_2^* + v) - U(w_2^*)] = \alpha[U(w_2^*) - U(w_0)]. \tag{12}$$

Since $w_2^* > w_0$, the right-hand side of (12) is positive. This implies that the left-hand side is positive, which implies, since $U'' < 0$, that $w_1^* < w_2^*$, which implies that $\frac{w_1^* + w_2^*}{2} < w_2^*$. If $w_1 + w_2 = 2w_0$, then the worker would receive a fluctuating income stream with an average of w_0 per period. The participation constraint requires the worker to receive an income stream with utility at least equal to that of a steady w_0 per period. Because the utility function is concave, the fluctuating income stream's mean must therefore exceed w_0; and $\frac{w_1^* + w_2^*}{2} > w_0$.
Q.E.D.

The numerical example of the previous section can be carried over into the two-period model. The second-period of the two-period model is equivalent to the one-period model, so $w_2^* = 1.15$. From equation (11), the condition for deterring theft in the first period is

$$(1 - e^{-(w_1+v)}) - (1 - e^{-w_1}) - \alpha p - \alpha((1 - e^{-w_2^*}) - (1 - e^{-w_0})) = 0. \tag{13}$$

This equation yields $w_1^* = 1.05$, which, as Proposition 2 predicts, is less than w_2^*. (In this example, $w_1^* > w_0$, but that is not necessarily the case.) The payoffs in both periods exceed the reservation wage, and the participation constraint is not binding. The employer could have paid $\underline{w} = .78$ in each period and tolerated theft, but by paying .64 (=(.22+.05) + (.22 + .15)) in wage premiums he avoids a theft loss of 2. Even though theft is not dissipative (because $c(v) = v$), the employer can profit by using efficiency wages.

With a few changes in assumptions, the two-period model can be transformed into a version of the well-known bonding model. The two changes are to assume that: (a) the marginal utility of income is constant instead of diminishing, so $U(x) = x$; and (b) the employer can commit to the wage w_2 and to firing the worker if and only if he is caught stealing. In the bonding model, stealing will occur in the second period no matter how dissipative it might be, because the worker faces no punishment except αp, which by assumption (1) is too small to deter. Stealing can be prevented in the first period, however, by giving the worker an upward-sloping wage path. In the extreme, the worker is paid zero (or even a negative amount) in the first period, and more than the reservation wage in the second period. This is efficient, because a worker with linear utility cares only about the average wage and does not mind having low first-period consumption. The employer can reduce the average wage to where it equals the reservation wage minus a discount for the worker's second-period theft income. The worker will accept the job and refrain from first-period theft to avoid losing the high second-period wage.

The satiation and bonding models differ in a number of ways, showing that the claim that linear utility is a simplifying and not substantive assumption (see Murphy and Topel, 1990, and Shapiro and Stiglitz, 1984) is more appropriate when the agency problem is effort rather than theft. First, there is no one-period bonding model; unlike satiation, bonding absolutely requires that the worker loses wages if caught stealing. Second, preventing the worker from smoothing his consumption over time is less costly when utility is linear; with concave utility, the average wage must rise to compensate for an uneven wage path. Third, the bonding model requires the employer to commit to a policy in advance. If the employer could commit to wages but not tenure,

he would fire every worker at the end of the first period to save paying the high second-period wages. If he could not commit to wages, he would retain the workers but not pay them the high wage. In the satiation model, on the other hand, precommitment is superfluous, because the employer pays a high second-period wage to deter stealing in the second period, and only incidentally does that help deter stealing in the first period.[7]

The two models' conclusions also differ. The bonding model implies that older workers steal, and the satiation model does not; and in the bonding model the worker receives exactly his reservation utility over his lifetime, so there is no queuing for such jobs. The bonding model describes a sophisticated form of piece-rate, in which accounts are squared at the end of the working lifetime instead of the end of the day. Eaton and White (1982) and Carmichael (1989) note that even in more complicated versions of the model, the employer would use entrance fees to extract all surplus from the workers, but we do not commonly observe such fees. In the satiation model, on the other hand, the average lifetime wage exceeds the reservation wage and the job can attract queuing. The employer is unwilling to use entrance fees to extract the worker's surplus, because the whole point of the wage premium is to reduce the worker's marginal utility of income. An entrance fee would avoid doing this only if the reduction in the worker's wealth at the time he paid the fee did not affect his wealth at the time he is employed.[8]

The satiation and bonding models represent two ways of deterring theft with high wages. In the one-period satiation model, high wages reduce the benefit of theft by making the worker value additional income less than avoidance of non-monetary punishment, and in the two-period bonding model, high wages increase the cost of theft by giving the worker a stream of future income that can be confiscated by the employer. The two-period satiation model combines these two effects, and that is why its wage path, like the bonding model's, is upward-sloping. It preserves the essential intuition of the bonding model while eliminating the conclusions that old workers steal and that the participation constraint necessarily is binding.

IV. IMPLICATIONS

The satiation model is most likely to apply if two conditions hold: (1)

the principal's loss from theft is high relative to the agent's gain, and (2) the agent's marginal utility of income is sharply diminishing. The first condition might well apply to elected officials. The wedge between the high cost to the public of corruption and the low benefit to the politician is striking, as Tullock (1980) points out, and monitor works less well than in the private sector because of the multiplicity of voter-principals. Rather than rely on ethics committees, it might be more cost-effective to pay a legislator an extra $100,000 per year to prevent him from granting million-dollar favors to lobbyists in exchange for $3,000 vacations. No less an authority than the senior Mayor Daley suggested this to the press when Chicago aldermen's salaries were raised from $8,000 to $15,000 per year: "Surely you can't keep a fella honest— you fellas couldn't be paid $8,000 a year and be honest in your job."[9]

The politician's job is an example of one in which great trust might justify large wage premiums, but the model also applies if the stakes are small and so is the required wage premium. If reservation wages are near subsistence, as in much of the present-day Third World or the West before the Industrial Revolution, theft is tempting because the marginal utility of income is high relative to the disutility of criminal punishment. The marginal utility of income is also more sharply diminishing, however, which reduces the wage premium necessary to deter theft. Unfortunately, the satiation model would be difficult to distinguish from the bonding model in such contexts, since the absence of entrance fees can be explained by the worker's lack of initial wealth.

The satiation model also applies to the principal-agent relationship between government and potential criminals. Rossi, Berk & Lenihan (1980) describe two experiments that sought to determine whether ex-convicts who were paid a form of unemployment insurance upon release would commit fewer crimes. In the first, the Baltimore LIFE experiment of 1971, released convicts were paid $60 per week until they found a job or $780 was paid out. All subjects had less than $400 in savings, and arrest did not remove eligibility for the payments, but imprisonment did. If one did find a job, his payment was reduced, but he continued to receive it until the $780 was exhausted. The results were that the payments reduced arrests on theft charges by 8% in the year after release (which was statistically significant),

while leaving arrests on other charges unaffected, and the payments did not discourage employment significantly. This encouraging result supports the satiation model, since it seems that the incentive to steal declined. The second experiment, the TARP experiment in Georgia and Texas, was somewhat different because it imposed a stiff tax on the transfers if the recipient became employed. The result was that recipients did not have significantly different arrest rates than non-recipients, but they had much more unemployment. The payments had a desirable direct effect on arrests, presumably due to the satiation effect, but an undesirable and equally strong indirect effect due to reduced employment and the consequent increase in the time available for crime. Both of these experiments lend support to the importance of satiation when incomes are very low.

The model predicts queuing for jobs, but only for jobs requiring trust and in which the marginal utility of workers is sufficiently decreasing.[10] Across occupations requiring similar skills, wages will vary according to the opportunities for theft, v, theft's dissipative cost, $c(v)$, and the expected punishment, αp. Queuing should be observed for jobs for relatively unskilled workers who lack outside wealth—jobs with low wages, not high wages. The satiation model also predicts that misbehavior rises when total income falls for exogenous reasons. In recessions, attorneys would cheat their clients more as the number of clients dropped, and production workers would pilfer more as their opportunities for overtime diminished. At the same time, the effort these agents put forth might well increase, since the reduced hours of work would reduce the disutility of effort.

The satiation model also implies wage stickiness. If the reservation wage w_0 is determined by conditions in industries that do not pay efficiency wages, then it will rise and fall with the business cycle. But the equilibrium efficiency wage w^* does not depend on w_0. Even if a recession reduces the reservation wage and the price of the industry's output, the wage necessary to deter stealing remains constant, so employers cannot reduce costs in response to reduced prices; they must reduce output and employment instead. It is too dangerous to reduce the wages of workers accustomed to high consumption; instead, the firm will discharge some workers and maintain the pay of the rest.

Finally, employers would prefer rich workers to poor workers, since someone with substantial outside wealth is less tempted to steal. A worker with more wealth than talent would be attractive quite independently of his social graces or family connections.[11] If effort is important, however, the advantage of the rich worker is less clear; the same satiation effect which makes stealing less tempting also reduces the effectiveness of monetary incentives for effort.[12] The advantages and disadvantages of rich workers have implications for the desired age of workers. If liquidity constraints prevent workers from smoothing their consumption over their lifetime, wealth effects can make old workers less willing than young workers to trade off current wages against the risk of punishment. If wages rise with age this is obvious: older workers earn more. If wages are flat, this may still be true, because the older worker has been able to accumulate more precautionary savings and pension wealth. It may be harder to induce the old worker to exert effort, but easier to prevent him from stealing, in contrast to the bonding model. It is not that the older man fears to lose his pension, but that his pension reduces his temptation to steal.

V. CONCLUDING REMARKS

Readers may decry the addition of yet another efficiency wage model to the literature, but the satiation model has the virtues of simplicity, a distinctive channel of operation, and different empirical implications. It implies that misbehavior will not be any more common in old workers than in young, that the worker's average wage over his career will be greater than the reservation wage, and that queuing will occur when trust is needed and worker wealth is low. The model can make such predictions precisely because it is particular enough not to apply to the typical modern job: it applies when the misbehavior adds to income, when a nonmonetary punishment exists, and when the marginal utility of income is significantly diminishing relative to the loss from employee theft. Employers pay high wages not to increase the worker's loss from firing, but to change his marginal rate of substitution between income and punishment, making theft a less attractive option. The high wage is neither carrot nor stick, but a way to reduce the worker's temptation.

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Table 1
Percentage of Cleveland Retail Employees Self-Reporting Misbehavior

Within the past year, how many times did you	About once a week or more	Once or more
Take a long lunch or coffee break without approval?	12.5	52.7
Fill out or punch a time card for an absent employee?	0.6	3.1
Do slow or sloppy work on purpose?	1.0	13.8
Come to work while under the influence of alcohol or drugs?	1.4	7.6
Come to work late or leave early without approval?	3.6	31.0
Use sick leave when not sick?	0.3	18.1
Get paid for more hours than were worked?	0.9	7.9
Ignore an instance of pilferage or shoplifting?	0.2	5.9
Use the discount privilege in an unauthorized manner?	0.8	18.5
Take office or clerical supplies?	0.8	11.6
Take an item of store merchandise with a retail value of less than $5?	0.6	1.9
Take an item of store merchandise with a retail value of more than $5?	0.6	1.9
Purposely under-ring a customer's purchase?	0.2	2.6
Damage an item of merchandise in order to buy it on discount?	0.2	1.4
Be reimbursed for more money than spent on business expenses?	0.0	1.5
Take company equipment or tools?	0.1	3.5
Borrow or take money from employer?	0.5	3.4
Take personal property of co-workers or customers?	0.0	0.5
Shortchange or overcharge a customer on purpose?	0.2	1.4

Source: Clark & Hollinger (1985), p. 35.
Notes: $n = 816$ to 828, depending on the question. Items below the double line are financial.

FOOTNOTES

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1. Smith (1776), 1-10, p. 44.

2. Lipman (1973), p. 154.

3. Bankruptcy protection would make it possible for the rich worker to suffer more than the poor worker from a monetary penalty. In particular, suppose that the penalty consists of restitution of the value of the stolen goods, but that the worker has resold them at a fraction of their value in the legitimate market. This would correspond to a penalty of $c(v) > v$. The poor worker can go bankrupt; the rich worker suffers a net loss of $c(v) - v$ if he is caught. The vulnerability of richer workers to civil damages is thus another reason why high wages deter misbehavior.

4. E.g., "There was a series of conveyor belts moving the goods around the plant, and the thieves were working both floors. A guy on the second floor would send the goods down to the first floor on a belt, and the first-floor guy, if the coast was clear, would take the goods off and stash them. If the coast was not clear, if someone happened to be watching him, he would toss the goods onto another belt leading straight into the incinerator." (Lipman (1973), p. 154).

5. These are not always trivial tasks. One reason why the government and not the victim prosecutes criminal cases is because punishing criminals is a public good; thus, the government may not look kindly on companies that tolerate employee crime. Also, the employer may have difficulty drawing lines separating what behavior is permissible from what is not. If employees are told they should feel no guilt as a result of nondissipative transfers, they may lose their inhibitions regarding dissipative transfers.

6. This will not satisfy the assumption that $\overset{Limit}{x \to 0}\, U'(x) = \infty$, but that

is only a sufficient, not a necessary, condition.

7. If the employer can precommit in the two-period satiation model, the bonding effect can dominate the satiation effect under certain conditions. Implicitly differentiating equation (11) gives

$$dw_1/dw_2 = \alpha U'(w_2^*)/[U'(w_1 + v) - U'(w_1)] \tag{14}$$

This expression is always negative, but if it is greater than one in magnitude, the employer can reduce his costs by increasing w_2 above w_2^* and reducing w_1. This might be the case if v and U'' were small, so the difference $U'(w_1 + v) - U'(w_1)$ would be small. In the numerical example, $dw_1/dw_2 = -.57$, so this is not the case.

8. An entrance fee paid some years in advance of employment would overcome this problem, but only if the individual could not borrow against future income (which would reduce his future net income by the amount of the repayment). This is problematic, because an entrance fee is ordinarily funded either out of initial wealth or through borrowing. If funded out of initial wealth, that leaves less wealth available later at the time of employment, so the worker is more tempted to steal. If funded out by borrowing, the debt must be repaid later, defeating the purpose of the satiation wage. A third alternative is to fund the entrance fee in installments ending before employment; one implementation of this would be to underpay entry-level positions requiring little trust relative to senior positions.

9. *The Chicago Reader*, 21 December 1990, p. 23.

10. Some care must be taken in determining whether a job requires trust. It might seem that security guards must be trusted, but they are poorly paid. In 1988, median weekly earnings of full-time "Guards and police, except public services" were $273, compared to $522 for "police and detectives, public service" and $288 for "Laborers, except construction," (BLS, pp. 196-198). But not only is it easy for the security guard to steal; it is also easy for the employer to catch him, since he is an obvious suspect. Thus, it is not always clear how much trust is needed in a job.

11. Eaton & White (1982) give another reason why an employer might prefer a rich worker: he can post a higher bond to be forfeited in case of

misbehavior.

12. The alert reader will wonder whether the reduced effectiveness of monetary incentives is also a concern when the worker begins poor, but is made richer by the efficiency wage premium. This can be handled with some care; the employer must provide the wage premium as part of the incentive pay.