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# Globally Incentives-Compatible Contracts Under Weak Third Party Enforcement

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## Abstract

We explore how the structure of incentives contracts adjusts to the creation of quasi-rents by the delivery of certain types of contract obligations under weak third party enforcement (TPE). The situation invites quasi-rent appropriation by some contractor. We focus on possible ex-post opportunism by the principal. We propose the concept of *globally incentives compatible (GIC)* contracts, where no contractor has the incentive to deviate ex-post from the obligations set ex-ante in the contract. We model optimal appropriation by the principal and the response of the agent when the contract is not GIC. The conditions that guarantee GIC for principal-agent the incentives contracts under weak TPE are investigated.

*Key words:* global incentives compatibility, quasi-rent, third party enforcement incentives contract

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## I. INTRODUCTION

Incentives compatibility (IC) is the cornerstone of contract theory in asymmetric information environments. An IC contract guarantees the contractors pay-offs that none of them can improve upon, and which may be construed to guarantee delivery of contract obligations. The fundamental underlying assumption of mainstream contract theory is the existence of an outside enforcement entity that adequately punishes contract violations (Laffont and Mortimart, 2002). When outside party enforcement is powerless as in the case of moral hazard, contract enforcement is built-into the contract via the incentives-compatibility constraint (ICC) which, however, does not cover P's reneging. If delivery by a contractor, say, the agent, generates Marshallian quasi-rent for other contractors, these contractors may do better by reneging on their own contract obligations (e.g., the principal can simply refuse to pay). This is ex-post opportunism usually related to *asset specificity* and the *sequential nature* of the delivery (Williamson, 1971; 1975). Under moral hazard, the ICC is really an example of Williamson's (1983) "private ordering" since public ordering even if adequate otherwise cannot enforce nonobservable obligations.

When the contracting game is sequential and retrieval of delivered obligation is costly, the player who delivers in some later period may opportunistically renege on his/her contract obligation. This is a very old problem that Thomas Hobbes tried to address already in *Leviathan (1651)* on the question of adherence to the *Covenant* when "one of the parties has performed already." Delivery in this case creates *appropriable quasi-rent* (Klein et al, 1978). The appropriation of quasi-rent depends on the quality of post-contract enforcement and the observability of shirking. In the case of non-existence of post-contract enforcement, as in the agency game of Shapiro and Stiglitz (1984) where the principal pays w in the first period resulting in shirking by the agent in the second period and a "no-contract" solution is subgame perfect. Repeat contracting with penalty triggers is their approach to ensure viability. "Vertical integration" or "ownership" is the mechanism favored by Coase (1937) and by Klein et. al. (1978). Interlinked contracts (Braverman and Stiglitz, 1982; Bell, 1988; Fabella, 1992) may also serve as a deterrent against ex-post opportunism in a single contract. The "hostage mechanism: is studied by Williamson (1983). These are forms of Williamson's (1983) "private ordering" (1983) or of North's (1990) *second party enforcement* where the contractors themselves craft a mechanism (e.g., penalty trigger) to impose the penalty or deter opportunism.

Second party enforcement, however, has its own drawbacks. Internal second party enforcement can be very costly and usually generates Pareto suboptimal outcomes. The Nash equilibrium solution of, say, the static Prisoner's Dilemma game or of the static Holmstrom (1982) team game is *self-enforcing* (i.e., allows no gainful manipulation) but is also normally Pareto suboptimal. By contrast, Pareto efficient outcomes (e.g., cooperative ones) normally are subject to shirking. Barzel (2002) discusses the drawbacks of self-enforcing contracts vis-à-vis TPE-enforced ones.

The usual textbook escape route (Mas-Collel, et. al., 1995; Hart and Holmstrom, 1987) is the resort to an adequate external judge á la Holmstrom (1982) or a third party enforcer (TPE) that imposes adequate penalty on the renegade of the usual principal-agent contract and discourages quasi-rent appropriation (North, 1990; Barzel, 2002; Hobbes, 1651). When the principal's obligation is observable and postpaid, the presence of an adequate TPE makes the contract, in a sense, ex-ante and ex-post *incentives compatible;* that is, no player in the contract has any incentive to appropriate any generated quasi-rent by shirking on his/her promised obligation. Barzel (2002) discusses the effect of TPE on the principal's incentive to shirk. In other words, there is no incentive to misdeclare ex-ante the intended ex-post delivery. This property we call here *global incentives compatibility*.

When enforcement is inadequate, post-contract opportunism cannot be ignored. Laffont and Mortimart (2002) and Laffont and Meleu (2000) studied the case of possible agent reneging in an adverse selection principal-agent model where a negative payoff (penalty) is called for. Complete absence of enforcement results in negative payoffs being scrapped. If enforcement is less than perfect, an *enforcement-proofness constraint* substitutes for the usual participation constraint and the contract is ex-ante and ex-post IC. Possible reneging by the principal is not treated.

Weak enforcement is the normal state of affairs in LDCs. Fafchamps and Minten (1999) have observed that contracts in LDCs tend to minimize the use of third party enforcement showing indirectly the frailty of enforcement. The issue we explore in this paper is the following: What happens if TPE extant but is *inadequate,* P has the incentive to renege and neither the vertical integration (ownership) nor the repeated game mechanism is appropriate? The contractors are then forced to craft a contract that adjusts to the quasi-rent aspect of obligations under inadequate enforcement, just as they adjust to, say, the risk attitude of players or the observability of obligations. The emphasis here is on possible ex-post opportunism by the principal.

In Section II, we first discuss the drawbacks of the familiar principal-agent contract under nonobservable effort, observable output and observable wage in the context of quasi-rent creation under weak contract enforcement. In III, we propose a categorization of contract obligations on the basis of quasi-rents. We define *globally incentive-compatible contracts (GIC).* We then give the conditions under which the textbook P-A contract under moral hazard is GIC and when not. In III, we model optimal quasi-rent appropriation by P under imperfect TPE. In IV, we model the possible response of A to a possible, but ex ante unobservable, opportunism by P. A is now deciding under uncertainty and crafts a homemade defensive insurance which leads, overall, to a lower effort and higher wage demand. P may counter by a *Spence-type signaling* of his quality via a *bond*, which restores the GIC character of the contract. Problems associated with second party enforcement are discussed, which lead to the superior efficiency of strong third party enforcement.

## II. THE BASE MODEL

Consider the familiar optimal Principal-agent (P-A) contract C(w*e*) = C* where P delivers w*, and A delivers e*; A's payoff is w* and P's is (x – w*). The contract solves the program P.1:

$$\max_{w} \int B(x-w)\, f(x, e)dx \qquad \text{(i)}$$

$$\text{s.t. (i)} \int [u(w) - v(e)]\, f(x, e)dx \geq U^0 \qquad \text{(ii)} \qquad \text{(P.1)}$$

$$\text{(ii)} \int u(w)f'dx - v'(e) = 0, \qquad \text{(iii)}$$

where w, P's contract obligation is observable, X the random output is observable with density function f(x,e) with $f' = df/de > 0$, e, A's obligation, is nonobservable and $U^0$ is A's reservation utility. (P.1.i) is P's objective function, which we will refer to later simply as EB(x, w, e), (P.1.ii) is A's participation constraint, and (P.1.iii) is the incentives compatibility constraint assuming the validity of the first order approach. The Langrangean multipliers $\lambda$ and $\mu$ corresponding to (ii) and (iii) are both strictly positive if B' and u' are strictly positive. Thus, the PC and ICC hold as equalities at C*, implying that A gets his reservation utility and supplies e*. P, in turn, gets (x – w*), which maximizes his expected utility and pays w* to A. A has no incentive to supply e < e* because at w*, e* maximizes A's utility. P has no incentive to offer w < w* because, *ex ante* w ≠ w* will give P less utility as e also falls to satisfy the constraint. If delivery of obligations w and e are simultaneous, the contract is robust against shirking. If e is delivered ahead of w, a problem can arise.

Once e* has been delivered by A, the incentive for P to renege on w* may or may not change. It will not change if a third party metes out adequate punishment on renegades. It will not change as well, given weak enforcement, if e* is costlessly retrievable once delivered or if w* is delivered at the same instant as e* (i.e., a spot contract where there is no time lag). But most contracts of interest involve some time lag and some difficult-to-retrieve effort.

Consider a contract that lasts one day. A is hired as a day laborer in the morning, supplies e through the day (sows a field), and gets paid at the end of the day. At the close of the day, the field has been sowed and P has gotten his x for that day. If e = e*, P gets his maximum utility before paying w*. Now he faces a decision either to pay A w* or something less. If w*, P gets his maximum within the contract. If he pays w < w*, he gets utility higher than that feasible within the contract because (x - w*) is strictly decreasing in w*. If P pays w < w*, A realizes less than $U^0$. But A cannot retrieve e*. He may *unsow the seeds* but that is costly to him and the payoff is zero for this additional work.

If P is opportunistic and A has no adequate recourse, P will entertain the possibility to better his position by *ex-post opportunism,* that is, by taking advantage of A's position weakened by delivery and costly retrieval. A is vulnerable to holdup. We explore the contract design complication of this opportunism when TPE is weak.

## III. GLOBAL INCENTIVES COMPATIBILITY

We first distinguish between two types of obligations on the basis of quasi-rent (qr) generation, which is more general than simple asset specificity. We adopt the definition of quasi-rent used by Klein et. al. (1978) as reservation value. We have observed that delivery of an obligation may generate quasi-rent for other contractors. This depends on its retrieval property.

*Definition 1:* A contract obligation is *costlessly retrievable (cr)* if (a) it can be recovered fully without cost after delivery, or (b) its delivery date comes later than the delivery by all other contractors. It is *ncr* otherwise.

*Remark:* A contract obligation that is ncr creates an opportunity for other contractors to improve upon their in-contract utility by reneging on their own contract obligations. One that is cr does not. Thus, quasi-rent is necessarily linked with ncrs.

The latter is more general than the *asset specificity property* which also satisfies the conditions above. An ncr obligation need not be asset specific. In the Shapiro-Stiglitz (1984) agency game, the wage w is delivered in period one (advanced) by the principal while e delivered in period two. The advanced w is costly to retrieve and, thus, is ncr but is not asset specific. In a contract game of simultaneous delivery (spot contract), both obligations are cr and no party is granted a rent-appropriating potential.

*Definition 2:* A contract is *globally incentives compatible (GIC)* if no contractor has any incentive to deviate ex-post, i.e., after delivery by other parties to the contract, from the ex-ante obligation stated in the contract.

*Remark 2:* Every *self-enforcing* contract (e.g., the Nash equilibrium) is also a GIC contract. The set of GIC contracts is larger than the set of self-enforcing contracts, which are rendered so by a built-in second party enforcement. Contracts that are not self-enforcing may still be rendered GIC by an adequate third party enforcer. Thus, *enforceable agreements* in cooperative game theory are rendered so by an assumed outside enforcement (Harsanyi and Selten, 1988). The Shapiro-Stiglitz static agency game (1984) is not GIC. Their repeated game version solution is GIC by virtue of second party enforcement via a trigger strategy.

A contract can be GIC due to the retrieval characteristics of obligations alone and not due to third party enforcement. Consider the contract C* that solves P.1 in Section II. The following is obvious:

*Claim 1:* Suppose no post-contract enforcement exists. C* solving P.1 is GIC if both e and w are cr.

*Proof:* Suppose both w and e are cr. Then, delivery by A of e* does not make deviation by P profitable, since delivery of $w < w^*$ triggers a withdrawal of e to satisfy PC and ICC. Since C* solves (P.1), w reduces P's utility. P has no incentive to deviate. On the other hand, since the ICC binds for C*, e* maximizes EU given w*. Therefore, delivering $e < e^*$, after w* is delivered, hurts A, who cannot just abscond with w*. Thus, A has no incentive to deviate. Thus C*(w*, e*) is GIC.

*Remark 4:* If obligations are cr, the contract C* that solves (P.1) is also *enforcement proof*, i.e., implementable regardless of enforcement quality (e.g., Laffont and Mortimart, 2002).

Thus, absent an ex-post contract enforcement, the familiar P-A contract C*, if obligations are cr, could still be GIC. This is still a form of second party enforcement where ex-post opportunism is deterred by either limiting the kind of obligations exchanged or limiting the set of contracts to spot. This limits the universe of exchange. When neither w nor e is cr, some other mechanism is required for a GIC contract. Second party enforcement of other forms such as a Nash equilibrium contract may be devised. Vertical integration or ownership is one and repeat contracting is another. We explore here the third party enforcement path. Specifically we investigate the incentive to appropriate quasi-rent in an environment of weak TPE.

## IV. OPTIMAL QUASI-RENT APPROPRIATION UNDER WEAK TPE

We first formally introduce the idea of the third party enforcement.

*Definition 3:* A third party enforcement (TPE) is an entity outside of the set of contractors, which imposes an expected penalty $pL > 0$ on renegades from *observable* contract obligations.

Note the observability requirement which allows enforceability. Let "a" $\in [0, 1]$ be the level of ex-post appropriation by P.

While pL is common knowledge, the actual penalty on P has a private cost dimension. It may simply be *conscience cost* which increases with the extent of appropriation "a". It could also be a rise in penalty probability. Let h(a) be that private cost, $h' > 0$, $h'' > 0$, $h(0) = 0$. Let the actual expected cost to P of any deviation "a" be [pLh(a)]. This is zero for a = 0 and rises with a.

If "a" is the deviation by P, A receives not the w, as stated in the contract, but (1-a)w* < w*. The optimal appropriation a* by P, for any w* and x, once e* has been delivered, is:

$$a^* = \text{argmax } EB(x - (1\text{-}a)w^*(z - c) - pLh(a)). \tag{1}$$

Note that after delivery of e*, the maximization is now unconstrained: PC and ICC need not be satisfied. The first order necessary condition for an interior maximum is, for any w*:

$$w^* - pLh' = 0, \tag{2}$$

which can be solved for a* as a function of w* and pL. We have:

*<u>Claim 2</u>:* Let e be ncr and w cr. Then: (i) a* rises with w* and falls with pL; (ii) a* = 1 if $w^* > pLh'$ for all $a \leq 1$ or for pL small enough; (iii) a* = 0 if $pLh' > w^*$ for any a.

Thus, the quality of TPE (pL in this case) changes the principal's incentive to shirk as observed by Barzel (2002). We now define the type of TPE in this context.

*<u>Definition 4</u>:* Let e be ncr and w cr. TPE is strong from the viewpoint of P if $pL \geq (w^*/h')$, i.e., a* = 0, for any a > 0. It is weak, otherwise.

Clearly, if P's private cost gradient h′ is large enough, P will never renege. This is a case of North's first party enforcement (see also Dixit, 2003). The following fleshes out the implicit role of TPE in the ordinary P-A contract:

*<u>Claim 3</u>;* Let e be ncr and w cr. Let TPE be strong from the viewpoint of P and be common knowledge. Then C* of (P.1) is GIC.

*<u>Proof</u>:* Obvious since a* = 0 under strong TPE and A knows this to be so. The latter means that A requires no more than the satisfaction of PC and ICC.

*<u>Remark 5</u>:* Claim (3) gives an example of a contract that is not self-enforcing but is GIC by virtue of a strong TPE.

*<u>Remark 6</u>:* If TPE is weak and e is ncr, P strictly gains by delivering (1-a*)w* and appropriating a*w* given contract C(w*,e*) that solves P.1. If e is cr, P strictly loses by deviating from C(w*, e*). Thus, P has an incentive to misrepresent, before A's delivery of e, the wage rate he intends to deliver once A has delivered. Indeed P can promise any w, which he does not intend to keep. When P deviates ex-post, the deviation violates the IC

> and/or PC constraints for A and redistributes resources in favor of P. Deviations by P that do not lead to the violation of the IC and/or PC constraints (i.e., because e, if cr, will fall as a response) will generate negative gain for P and will not be resorted.

If A knows $a^* > 0$, then he can demand a contract that factors in ex-post reneging by P, that is, one that satisfies PC and ICC ex-post. But A cannot perfectly predict $a^*$, which is private information of P. Only $pL > 0$ is public knowledge. Thus, A will respond ex-ante by crafting a second-party self-protection device. We deal with this next.

## V. SECOND-PARTY DEVICE AGAINST UNOBSERVABLE RENT APPROPRIATION

### 1. Second-Party Device: A's Response

Let e be ncr. Let reneging by P be private information to P. Let the ex-post wage rate be $w_r = bw$ where w is the contract wage and b is a random variable which has probability distribution over support $[z, 1]$, $z \geq 0$ with mean b and variance v(b). Agent A knows only the probability distribution of b.

A has now to accept or reject the contract offer under uncertainty. Letting m be the mean of $w_r$ and v its variance, and assuming, for simplicity, a two-moment distribution for b, the expected utility of $w_r$ is:

$$Eu(w_r) = u(m) - Rv/2 = H(m, v) \tag{3}$$

where R is the Arrow-Pratt absolute risk-aversion measure assumed strictly increasing. In this framework, w, the contract wage, is the highest wage that A can hope for from the contract and occurs when b = 1 and P abides by the contract. If b = 1, the expected wage m = w. We assume that H(m, v) as a composition function of w, has the requisite concavity properties.

What is common knowledge in the enforcement environment is pL, the expected statutory penalty for any shirking. What is known only to P is h(a).

Thus, when P offers a particular contractual w, he knows that A suspects reneging and factors this only through m and v, both functions of w, which are assumed known to P. Let there be an expected public penalty q that A considers "adequate", i.e., $pL \geq q$ means A believes that P does not shirk for sure (b = 1), and $pL < q$ means that some shirking is expected by A to occur. In this case, q could be equal to $w^*$. We say that *TPE is strong from the viewpoint of A* if $pL \geq q$. We know that the support of b is $[z, 1]$, $z \geq 0$. We assume z(pL) and $z' > 0$, $z(0) = 0$, $z(q) = 1$. We spell out what this means for m and v:

$$\text{(i)}\quad m = \begin{cases} w \text{ for } pL \geq q \\ \bar{b}w \quad 0 < pL < q \\ 0 \quad pL = 0 \end{cases}$$

$$\text{(ii)}\quad v = \begin{cases} 0 \text{ for } pL \geq q \\ w^2\, v(b) \text{ for } pL < q \end{cases} \tag{4}$$

Thus, m is strictly increasing in pL < q, while v is strictly decreasing in the same: (dm/dpL > 0, dv/dpL < 0).

<u>*Example*</u>*:* Suppose b is uniformly distributed over the support [z, 1], $z \geq 0$. Then, $\bar{b} = (1+z)/2$ and $v(b) = (1-z)^2/6$. Note that when z = 1, the $\bar{b} = 1$ and $v(b) = 0$. Thus, m = w and v = 0 if z = 1(pL $\geq$q) and m = (1+z)w/2 and $v = w^2(1-z)^2/6$ if z < 1(pL < q). Both m and v are functions of w. If we let z(pL) with z(0) = 0, z(pL$\geq$q) = 1 and z′(.) > 0, then m and v have the properties in (4).

P offers A a contract that solves the following program:

$$\begin{aligned} &\max \;\; EB(x, w, e) \quad \text{(as in (P.1))} \\ &\text{s.t.} \;\; \int H(m, v)\, f(x, e) - v(e) \geq U^0 \;\; \text{(PC)} \\ &\int H(m, v)\, f'(x, e)dx - v'(e) = 0 \;\; \text{(ICC)} \end{aligned} \tag{P.2}$$

Let $C(w^0,e^0)$ solve (P.2). How is this different than C(w*, e*) that solves (P.1)? We have:

<u>*Claim 4*</u>*:* Let e be ncr but w cr. Let TPE be strong from the viewpoint of A, i.e., pL $\geq$ q. Then $C(w^0, e^0)$ = C(w*, e*).

<u>*Proof*</u>*:* Suppose pL $\geq$ q. Then m = w, v = 0 and H(m, v) = u(w) which recreates the PC and ICC of (P.1). The maximand of P.2 is identical to that of P.1. Thus, the optimal contract is the same. Q.E.D.

What this means is that there is a perceived level q of TPE that induces A to completely drop his guard against ex-post opportunism by P. That is, at pL $\geq$ q, A believes that P will abide by C*. If this belief is well-founded (due perhaps to repetition), C* is perfect Bayesian equilibrium and may indeed be GIC (i.e., if a* = 0 at pL $\geq$ q), then P pays w* and A supplies e*). But P is not bound by this belief and if q is too low, P will still renege. The following is obvious from Claim 3 and 4:

*Claim 5:* Let $pL \geq (q, w^*/h')$ for every $a > 0$. Then, $C(w^0, e^0)$ that solves (P.2) is GIC.

*Claim 6:* Suppose $pL < q$. Then a rise in pL raises $e^0$ for the same $w^0$ and vice-versa.

*Proof:* The ICC binds. Totally differentiate the ICC in (P.3) and solving for $(de^0/dpL)$ gives:

$$(de^0/dpL) = -(A/B)$$

where $A = \int (H_m m' + H_v v')f'dx > 0$ and $B = \int H(m, v)f''dx - v''(e) < 0$. Thus, $(de^0/dpL) > 0$. That $(dw^0/dpL) < 0$ for given $e^0$ is analogously shown. Q.E.D.

$C(w^0, e^0)$ is either less productive ($e^0 < e^*$) or more costly ($w^0 > w^*$) or both than $C(w^*, e^*)$ because A adopts a homemade device against possible reneging by P by committing less effort to P. This lowers the *potential regret* due to a shortfall in realized EU relative to $U^0$. If A is not sure of w*, he may offer to work only half a day. The lesson here is that because of the private information dimension of TPE (i.e., h(a)), what is GIC-adequate TPE for P ($w < pLh' \Rightarrow a^* = 0$) may not be GIC-adequate for A and vice-versa. Thus, GIC is not guaranteed, except when pL is high enough as in Claim 5.

## 2. Williamson's Hostage as GIC Device: P's Response

Williamson (1983) proposed the use of *hostage* as a commitment device to remedy ex-post opportunism. We show how this delivers the GIC property of contracts. Suppose the principal to be one for whom reneging does not pay since $pL > (w/h')$ holds for all $a \leq 1$. A, however, cannot observe this (in particular, h′) and still acts defensively. P can remedy the inefficiency associated with $C(w^0, e^0)$ by credibly posting a *bond* or a hostage worth bw* with a reputable *bondsman*. This is a *credible commitment* device that awards w* to A at the end of the contract period. In effect, P has tied his own hand with the bond and erases the possibility of qr appropriation on his part. A knows this and agrees to $C(w^*, e^*)$. The bond, if credible, automatically replaces $pL \geq q$ in Claim 4 as condition for total trust, that is $w^* = q$. Thus:

*Claim 7:* Let e be ncr and w cr. The credible *hostage-enhanced* $C(w^*, e^*)$ which solves (P.1) is GIC.

The hostage, in effect, renders the contract obligation delivery *simultaneous* and transform e effectively into a cr. We have here echoes of *signaling*, which allows the symmetric information equilibrium to be recovered under adverse selection (Spence, 1974). The bond could take innumerable forms. It could be a costly reputation that erodes with shirking. Or it could be an alignment of interest through marriage. The important condition is that the device is clearly observable and credible to A. This device can, of course, be P's own *word of honor*, which P has never been observed to break.

The biggest hurdle for the Williamson hostage device is the provision of a *credible commitment* in the absence of an adequate TPE. Who guarantees the credible commitment?

## VI. FROM BONDSMAN TO TPE

This bond or hostage device, even if it works, has several drawbacks: (i) it is costly to P who, in a sense, buys A an insurance policy; (ii) it is exclusive to P once set up, i.e., no other P can use the device; (iii) it is indiscriminate, i.e., whether P is a potential reneger or not, P has to post the same w* to attain C(w*, e*); and (iv) the credibility of the bondsman has to be guaranteed. A potential entrepreneur with good technical or commercial aptitude can be barred from the market by lack of resources to finance a bond. An exclusive device such as reputation associated with a particular P can lock-in the market even if said P himself is less technically efficient than another one without a track record. This is a case of second-party enforcement capacity rather than technical efficiency determining the market winner. Thus, second party commitment devices even when they work tend to limit the universe of principals and enhance the market power of the better endowed. Finally, the bondsman may simply abscond with the bond.

The bond mechanism, to be credible, must take on the characteristics of TPE in that it must be impartial and robust against inroads by either party. Furthermore, the Williamson hostage only transfers the ex-post opportunism rent from the principal to the bondsman. TPE, for reasons above, is the superior wealth maximizer (North, 1990).

## VII. SUMMARY

In this paper, we investigate the structure of incentives contracts when delivery of contract obligations generates quasi-rent, which other contractors may appropriate by reneging on their contract obligations. The contract literature includes certain devices to combat ex-post opportunism, viz., vertical integration or ownership (Coase, 1937; Klein, et. al., 1978); repeated agency game (e.g., Shapiro and Stiglitz, 1984); linked contracting (Braverman and Stiglitz, 1982), and an adequate third party enforcer (Holmstrom, 1982; Hart and Holmstrom, 1987; Laffont and Mortimart, 2002) that punishes renegades. The first two are in North's (1990) categories second party enforcement because they are resorted to by one or other of the players in a potential exchange. Second party enforcement has its own drawbacks, prominent among which is its costliness and its exclusivity. Third party enforcement, by contrast, involves a specialist that can ensure many contracts at once and exploit scale economies in enforcement.

But third party enforcement can be, and usually is, imperfect, especially in countries with weak institutions. Laffont and Mortimart (2002) treated the case where the agent may renege. We explore the effect of weak TPE when the principal rather than the agent has as incentive to renege in this paper.

We first distinguish between types of contract obligations: those that do not generate quasi-rent (costlessly retrievable) and those that do. This distinction is based on (a) *non-synchronous delivery* of obligations and (b) *costly retrieval* after delivery (related to *asset specificity*). We then introduce the concept of *global incentives compatibility* (GIC) property where no contractor has an incentive to deviate ex-post from the ex-ante obligation prescribed in the contract, that is, after delivery by others. Every self-enforcing contract, such as a Nash equilibrium, is GIC but not vice-versa.

We show that the familiar P-A contract under moral hazard that satisfies the *incentives compatibility constraint* (here called ex-ante IC) is still GIC in the absence of post-contract enforcement, if the obligations are costlessly retrievable. When A's costly obligation is costly to retrieve, it is profitable for the principal to misrepresent his/her intended delivery of w in the ex-ante contract.

We then explicitly introduce the role of third party enforcement in the principal's decision problem. In a sense, the principal decides on both the observable wage and the extent of quasi-rent appropriation based on the quality of TPE. TPE is then defined as either strong (no appropriation) or weak (some appropriation). The usual proviso in the contract literature of the existence of adequate outside enforcer or court is given a rigorous interpretation, i.e., when valid and when not.

While some aspect of TPE is public knowledge, some are not. There is a very private valuation attached to the same penalty that is known only to the principal. The agent, then, has to decide on the contract in an environment of uncertainty. To lessen the extent of quasi-rent generation and the level of ex-post regret, the agent accepts a contract that factors in his prior belief about P's delivery, i.e., that on average will give him his reservation utility. For some large enough expected TPE penalty for shirking, the ordinary P-A contract re-emerges. The contract under weak TPE is necessarily more costly to P or less committed for A; thus, less efficient. We also show that a principal can avoid the inefficiency of the resulting contract under weak TPE by posting a *bond* equal to the post-paid part of the wage as long as the *bondholder* is credible. This renders contract delivery simultaneous and renders the contract GIC. We then discuss the drawbacks associated with second party enforcement mechanisms.

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