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Meenakshi Rajeev*

Abstract

Labour management is one of the most crucial task of an entrepreneur. In order to surpass the stringent labour regulations, the industry sector in India is largely resorting to contract labourers, who are governed by the "Contract Labour Regulation and Abolition Act of 1970". A primary survey carried out in Karnataka one of the most industrially developed state in India, reveals that many of the stipulations made in the Act to safeguard contract labourer are not followed in practice. It has also been felt by the workers that collusive agreement between the labour inspector, the protector of law, and the principal employer i.e., the manger or the entrepreneur (or the contractor) has aided the violation of law. This paper discusses some of the survey findings and considers a game theoretic model to show why it is economically optimal for an enterprenuer and a labour inspector to collude. It also examines whether any provision of reward for the labour inspector would help to protect the law. Though the paper is based on Indian experience, it has relevance for a number of economies in the Asian region.

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Introduction

In this age of globalization, the employment structure across the globe has been undergoing changes in all nations. In order to effectively compete in a globalized market, one needs flexibility relating to labour, capital, or bureaucracy; this allows a producer to adapt to the fast- changing world and compete effectively. In particular, it is argued that stringent labour regulations not only put domestic producers at a disadvantage but also deter foreign direct investment and eventually impact adversely on investment, output and employment. Over the last two decades, a number of countries have attempted to liberalize their respective labour markets and have also amended their labour laws so as to make them more investment- and employment-friendly – a process that has weakened job security and collective bargaining (Agarwal, 2001). In Bangaladseh, for example, globalization is found to reduce the number of employees working under permanent contracts and to create non- traditional employment structures including part time , casual and contract labour (Khan, 2005). In the context of the Philippines, McGovern (2005) mentions that "…labour flexibilization is used synonymously with contractualization or casualization of labour". In India too we observe an increasing use of casual /contract or other such non informal labour over time (Deshpande et al 2004[1], Rajeev, 2008).

Among different kinds of employment that have been created in various economies to circumvent labour laws, contract labour is becoming one of the prominent forms. If we assume that such a flexible form of employment is indeed necessary in a competitive world, then how do we extend social protection to this section of labour? It has been observed in Bangladesh that with such informalization of labour, social security of workers, in general, have decreased and workers are often terminated without benefits (Khan, 2005). Commenting on Asian women workers in general, Agnes Khoo[2] remarks that such contratualization has made women workers highly vulnerable to and unprotected against the whims of management.

In India, contract labourers are protected by the Contract Labour Regulation and Abolition Act, 1970. A contract labourer is defined in the Act[3] as one who is hired in connection with the work of an establishment by a principal employer who is the firm owner or a manager through a contractor[4]. The act makes a number of provisions for the welfare of the contract workers including payment of minimum wage , social security benefits and others. At various points of time Government amended the law with a view to make it more labour friendly. However, such amendments can be of help to the workers only if implementation of the law is ascertained. In order to have a reality check, we have carried out a survey of the status of contract labour in an industrially advanced state in India, viz., Karnataka. It has been observed during our field visits that whatever protections have been provided by the law are not adhered to in practice. This features is not special to India, but is observed in the context of other developing nations as well. For example, in his study on the South African situation, Theron (2002) mentions that in spite of having many laws like Basic Condition of Workers Act, the Equity Act etc., lack of enforcement makes it futile to have laws :"On the surface all is well. On the ground, things could hardly be worse" Theron(2002). In Bangladesh too Khan (2005) observes that labour laws are not implemented in most of the privately owned industries. In the Indian case, Kumar (2002) Blames it on the fact that for a contract worker it is not only hard to prove his/her identity as workers under the labour law, but employer-employee relationship is also not easy to establish.

At this backdrop it is crucial to examine how far the existing laws are implemented especially by the private sector enterprises in India. Our field survey reveals that collusive agreement between the Contractor (or, the inspector- the protector of law), and the principal employer often aided the violation of the law. This paper discusses some of the survey findings and formulates a *game theoretic model* to show why it is economically optimal for the inspector and the employer to collude. More importantly, the paper examines whether any provision of reward for the labour inspector would help protect the law and enhance the welfare of the vulnerable contract labour class.

In the next section the Contract Labour Abolition and Regulation Act, 1970, has been discussed in some detail. The section that follows delineates some of the survey findings. The penultimate section poses the problem in a game-theoretic framework. While the next two sections describe the Indian scenario, the theoretical formulation considers a general situation. Implications of the theoretical model, therefore, are relevant for most developing nations that are facing the problem of compliance of law. The concluding section sums up the findings.

Contract Labour Regulation and Abolition Act, 1970

In India, contract labourers are protected by the Contract Labour Regulation and Abolition Act, 1970. A contract labourer is defined in the Act[1] as one who is hired in connection with the work of an establishment by a principal employer through a contractor. While a contractor is the supplier of contract labour for the organisation, a principal employer is the person responsible for the control of the establishment. This act applies to any establishment in which 20 or more workmen are employed on a contract basis on any day of the last one year and also to all contractors who employ or have employed 20 or more workmen on any day of the preceding twelve months.

Every principal employer to whom this act applies should register his establishment in the prescribed manner for employing contract labour. Unlike the industry sector, generally, there is no provision for remaining unregistered. If the Government at any point of time is dissatisfied with the practices followed, it can revoke the registration of an establishment.

Contract workers need to be paid as per the minimum wage act. For the health and welfare of contract labourers certain provisions have been made mandatory by the Contract Labour Act such as safe drinking water, canteen facilities, first aid facilities etc. Social security covers in terms of provident fund benefits and medical facilities need to be also given to the contract employees.

It is the primary responsibility of the contractors to provide all facilities to the workers as delineated in the Act. However, the principal employer should ensure the presence of his authorized representative at the place and time of disbursement of wages by the contractor to the workmen and it is the duty of the contractor to ensure

[1] Contract Labour Regulation and Abolition Act, 1970.

the disbursement of wages in his/her presence. However, if the contractor fails to pay wages or provide other facilities, the responsibility falls on the principal employer. Field officers of labour department are supposed to conduct regular inspections to detect violations of the provisions of the Act.

Apart from the regulatory measures provided under the Act for the benefit of the contract labour, a government can prohibit employment of contract labour in any establishment in any process operation or other work. Such restrictions are often decided on the basis of whether the work is perennial in nature or the work is incidental for an establishment. In such cases it is also examined whether the work is being done ordinarily through regular workmen in that establishment or a similar establishment.

Though the Act lays rules as to how the contractual employment should be maintained and there are government officials for inspection to detect violations of the norms, because of the presence of two separate management systems, viz., the contractor and the principal employer, employer-employee relationship often becomes blurred. Consequently, contract labour often does not get its due and this has given rise to a number of litigations. One of the important sources of controversy is whether contract labour can be used in the **core activities of an establishment** together with the regular employees. A set of perennial or core activities is defined in terms of what a company had declared as its main activities at the time of registration under the Factories Act of 1948. Several litigations arose because of the use of contract labour in the so called 'core activity' and a number notifications were issued prohibiting the companies to employ contract labour for some specified work. At present, an establishment is not prohibited, in general, to employ contract labour for the core activities. A state government, however, can amend this provision of the act. A few state governments have gone ahead with such amendments.

Implementation of the Contract Labour Act: A Survey Based Analysis

Approach to Information

The survey is confined to the manufacturing firms which are divided into 4 groups:

a) central public sector units

b) state public sector units

c) large manufacturing Units (with 100 or more employees or investment more than 1 crore or a subsidiary unit of a multinational company[5])

d) small manufacturing companies (less than 100 employees and/or investment less than 1 crore)

To select the sample first a list of companies was compiled using Labour Department records. The sampling design used in this context was multistage. First, a company was selected and then all the contract workers of the unit were interviewed.

As often experienced by economists working in this field (Deshpande *et al,.*2004), collection of data regarding contract labour was found to be extremely difficult due to lack of cooperation from the firms. Managements of the firms were often secretive about the number of contract workers used and the benefits provided to them. Though we first planned to divide the population into several strata incorporating different features of contract labour, e.g., type of job they were engaged in etc., the problems faced in the pilot survey compelled us to use only a very simple sampling technique. A structured questionnaire was used to interview the employees and the data were later processed and analysed using the SPSS package.

Job-type-wise the sampled labourers follow the following distribution pattern (table 2).

Table 2: Percentage of workers classified according to the job type

Type of jobs	Percentage (%)
Gardening	0.55
Canteen	2.75
Security	8.79
Technical	10.99
Loading, unloading, packaging	12.64
House keeping	19.78
Helper	39.01
Others*	5.49

** Others include tailoring, painting etc.*
Source: Field survey data

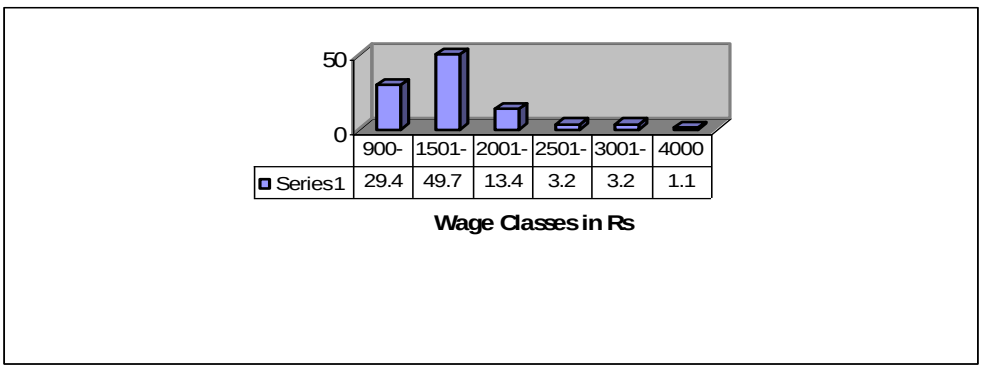
Thus, we observe that 10 percent of the employees are in technical jobs (mainly electricians and mechanics) and supposedly engaged in *non-peripheral activities*. Our survey also reveals that there are contact agencies that specialize in supplying labour with technical degrees to the firms.

A separate survey of contract agencies and principal employers has also been carried out(simple random sampling technique is used and sample size is 30 each).

Survey Findings

Wages: According to the contract labour act, the companies are supposed to adhere to the minimum wage norms. However, during our survey we have found that there are workers earning less than Rs 1000 ($25 approximately) per month, which clearly does not satisfy the minimum wage criterion. Figure1 depicts the detailed scenario, where it is observed that the majority of employees earn below Rs 2000. Only 1 percent of the employees earn Rs 4000 or above, while almost all regular employees engaged in similar jobs earn over Rs 6000. (Fig.1).

Fig 1: Percentage of employees with different wage levels



The first row shows the wage classes and the second row shows the percentage of workers falling in that wage class.
Source: Compiled from Field Survey

In general, it has been found that there are three categories of firms as far as wage payment is concerned. The large private firms that pay more than market wages as efficiency wage. The efficiency wage hypothesis in economics states that if the work effort depends positively on the wage level, a profit maximizing firm would find it profitable to pay above the market clearing level. The second category of firms are those which

strictly adhere to the prescribed minimum wage norms. Public sector firms fall in this category. The third category comprises the large number of small private firms who prefer to employ uneducated workers who can be paid even less than minimum wages. Much of migrant labourers from the eastern and north eastern regions of India and also from Nepal, fall in this category.

Thus it is observed from Fig.1 that at least 30% of the employees earn less than Rs 1500 which is below the minimum wage level. While a proportion of contract labour is paid the minimum wage, it is the *overtime payment* through which contractors usually try to extract additional incomes for themselves by taking advantage of the vulnerability of contract employees. While regular hours of work for contract workers is uniformly reported by all as eight hours per day, most of the employees are also engaged in overtime work. The contract workers interviewed were not very sure of wage rate for the overtime work. This indicates that payment is made purely on adhoc basis.

The irony of having provident fund benefit: Though contract workers enjoy provident fund benefits, the provident fund (PF) is often a burden to them rather than an aid. It is a burden in the sense that every month some fixed amount is deducted from their meagre salary for provident fund contribution. However, these workers often change the contractor they work for and a new provident fund account then gets opened. Unfortunately, once a worker leaves a contractor, he/she never gets any cooperation from him in retrieving the money paid. Many contract agencies also close down and then retrieving the PF due becomes very difficult for the employee. It is also the duty of the principal employer also to verify the PF details, which is however, not often done. In order to recover the PF amount, a contract worker has to have a bank account in which the sum due should be deposited by cheque. Contract workers often cannot maintain accounts because of minimum deposit requirements by banks. This makes recovering their PF dues even more difficult. Survey reveals that 64% of the workers reported that they have not been able to retrieve their PF due. In addition, there are a number of unregistered contract agencies that deduct provident fund contributions from the workers but never deposit the same in the provident fund office and after a few years change the location and start the same business with a different name. There are obvious advantages of being un-registered as it enables an agency to evade taxes, in addition to avoid paying PF, ESI benefits etc. to a worker and thereby increase one's profit margin. Therefore, when a registered company tries to compete with an unregistered one, the only possibility appears to be to exploit the labour as they are in excess supply.

Excessive Competition Leading to Collusive Agreements and Corrupt Practices Due to high level of competition, profit margin measured through commissions has gone down drastically. Usually small and medium contract agencies do not enjoy scale economies and if volume of business goes down they cannot operate at a very low margin. This often leads them to collude with the principal employer and sometimes even with the labour inspector and compete effectively in the market by reducing cost through cutting down the wages and benefits of contract labour and thereby violating the provisions of the act[6]. Though for obvious reasons none of them confided to be engaged in any corrupt activities, knowledge of existence of high level of corruption in this sector has been reported by over 90 percent of the agencies.

Ingenious Way of Avoiding Detection by a Supervisor: It is also revealed through our survey that some of the companies maintain more than one register; one for the scrutiny of the labour inspector (supervisor) and the other contains the actual figures. The respective inspector then have to be ingenuous enough and to be ready to put the necessary effort to bring such corrupt practices to light. Even if s/he puts effort and detect anomalies, it is often optimal for the supervisor to collude with the responsible parties in return for a bribe.

The essential question that arises at this juncture is, whether it is possible to ensure proper implementation of legal provisions and if so, how? To arrive at a sensible answer to this question it is essential to understand how a collusive activity benefits the involved parties . The best frame-work to understand such strategic behaviour is a game theoretic one. The theoretical model and the strategic behaviour discussed below is general enough to be applicable to any developing economy facing the problem of non compliance of law.

Collusion as an Optimal Strategy

Consider two decision-making entities viz., a set of principal employers (to be called agents) and a representative labour inspector (to be called supervisor).

The Model

The model under consideration is that of Marjit, Rajeev and Mukherjee (2000)[7]. Suppose that the economy consists of n potentially corrupt agents, in this case the agents may be the principal employers[8] who can be engaged in corrupt activities by not complying with the law. There is a supervisor, in this case a labour inspector, who is in charge of detecting such unlawful activities by the agents. We assume that the supervisor is dishonest in the sense that s/he is ready to take a bribe from the agents for not reporting the crime (to the higher authorities), after detection, when it is optimal for him/her/her to do so.

The agents are different from each other with respect to their *abilities to avoid detection* by the supervisor[9]. This assumption is incorporated on the basis of our survey findings that some of the principal employers used various ingenuous tactics like maintaining two registrars to avoid detection by the labour inspector.

In particular, the agents who have the lowest ability or synonymously having the least experience in the field would be notified as the type 1 agents. Thus, a type t agent has lesser ability to avoid detection than a type t+1 agent. Finally, the type T agents form the upper bound by being the ones with the highest ability. To capture this feature, we would index the agents of different types through θ (a real number) belonging to the interval $[\theta_T, 1]$, where the type T agents would be indexed by θ_T and the type 1 agents by 1. In general if θ_t is the index for a type t agent and θ_{t+1} for a type (t+1) agent and if the latter is more experienced , then $\theta_{t+1} < \theta_t$. Let each type comprise of equal number of agents n and the total number of agents is N (=nT).

Thus, the supervisor's *chance* of detecting a crime depends on the type of the agent i.e., how experienced s/he is in concealing her/his crime or embezzlement. We assume that this chance or *probability* also gets influenced positively by a second factor viz., the *effort* 'e' made by the supervisor for detecting a crime.

More precisely, if the supervisor puts an effort 'e' to catch an agent whose type is indexed by θ, the chance of the former being successful is denoted by 'θ p(e)', which clearly decreases for the agents with a lower type index (or, equivalently higher ability to avoid detection). In other words an agent with a higher ability to conceal her/his crime will be indexed by a smaller θ and hence will show a higher chance of getting detected. In particular, the probability of detecting a type T agent is θ_T p(e) and that of a type 1 agent is $p(e)\ (=1.p(e))$. This exertion or effort produces disutility to the supervisor, which we denote by $d(e)\geq 0$ and make the following assumptions:

$$p(e)=0=d(e),\ if\ e=0,\ \ and\ p'(e)>0,\quad p''(e)<0,\quad d'(e)>0,\ d''(e)>0.$$

The first two conditions imply that the probability of detecting a crime increases with the increase in the effort level given by the supervisor, but, it increases at a decreasing rate. The next two inequalities imply that disutility from putting the effort increases with the increase in the level of the effort, but if one goes on putting higher and higher level of effort, disutility can shoot up with such excessive effort and resulting exertion. If a corrupt agent is brought to the court of law s/he has to pay a penalty $\alpha x,\ \alpha > 1,$ where, x is the net pay-off for the agent arising due to his/her corrupt activities and α is the penalty rate. Alternatively however, the agent can pay a bribe B to the supervisor for not reporting the crime. Let B is '*take it or leave it*' type of bribe and $B< x$.

Given this basic framework, let us now look at the strategies available for the supervisor and the agents. An agent can be honest (H), i.e. , s/he is complying with the labour law, or can be dishonest (D) , i.e., tries to violate law by exploiting the workers. The supervisor's strategies are either not to accept a bribe and opt to report (NA) or, to accept a bribe (A) for not reporting the crime after detection. In this set-up if the supervisor knows the type of an agent as t and plays (NA, e), i.e., s/he does not accept a bribe and puts effort level 'e' for detection of a crime and the agent plays D , then the expected pay-off to the agent is :

$$x\{1-\theta_t p(e)\} + (x-\alpha x)\,\theta_t p(e)$$
$$=x\{1-\theta_t\ p(e)\}-x\beta\,\theta_t\ p(e)\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

where, $\theta_t \in [\theta_T, 1]$ is the index for the type t agents, $\beta = \alpha - 1$ and $p_t(e) = \theta_t p(e)$.

Thus, with probability $p_t(e)$ the agent gets caught and pays a fine α x . Hence his/her net pay-off is $(x-\alpha x)$. On the other hand, with probability $1-p_t(e)$ s/he does not get caught and hence, earns x, which in turn gives us (1) as the expected pay-off for the agent.

The supervisor's pay-off is :

$$H(e) = -\,d(e)\ \ldots\ldots\ldots\ldots\ldots\ldots(2)$$

More precisely, in the current set-up, even if the supervisor is successful in detecting the unlawful practices s/he does not earn any additional income , rather incurs disutility due to effort, to the extent d(e).

Suppose the supervisor follows (A,e). Then the agents' net pay off would be

$$x\{1-\theta_t p(e)\} + (x-B)\,\theta_t p(e)$$

There are certain implications of a supervisor taking a bribe B. In particular we assume that there is a probability q, that the corrupt supervisor is successfully *penalized* for taking a bribe, in which case s/he incurs a loss L, where, L is the discounted value of the loss from a potential penalty. It is assumed that q and L are *exogenously*

determined which essentially depend on the social consciousness as well as alertness and honesty of the reporting and judiciary system. Hence whenever the supervisor takes a bribe B, there is always a chance to getting caught later and incur an expected loss qL. Thus his/her net pay-off from such an activity would be $B-qL$. However, such possibilities will occur only if the supervisor can detect a corrupt agent which has probability θ_t p(e) and an effort put will always cause some amount of disutility capture by $d(e)$. Thus the supervisor chooses his/her effort level so as to maximize his/her expected pay-off:

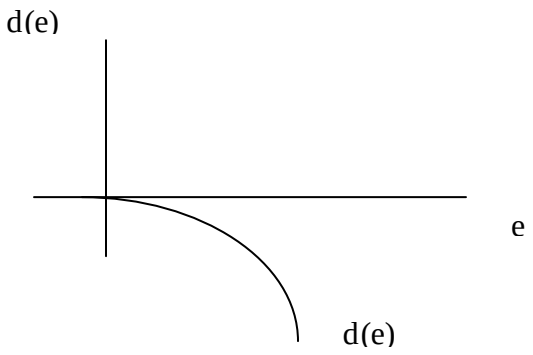
$$Max_e \{ B - qL\}\theta_t p(e) - d(e) \ldots\ldots\ldots\ldots\ldots (3)$$

Given this frame-work we have the following result.

Proposition 1: *Given the above set-up, unlawful practices on the part of the agents cannot be prevented.*

Proof: Suppose the supervisor follows (NA,e) . Then given the assumed properties of d(e), Fig 2 below shows that the optimal effort level is 0 for the supervisor (see equation (2) above.

Fig.2: Optimal Effort level



Therefore, for the agent who opts for D, his/her pay-off would be $x\{1-\theta_t p(e)\} + (x - \alpha x)\theta_t p(e) = x$ as $p(e)=0$ when, $e=0$.

On the other hand, if the agent plays H, the resulting pay-off would be 0. Thus s/he would opt for D.

Alternatively, if the supervisor opt for (A,e), suppose her/his optimal effort would be e^{**}, then s/he earns $\{B - qL\}\theta_t p(e^{**}) - d(e^{**})$

By being dishonest (D) the agent in turn will earn

$x\{1-\theta_t p(e)\} + (x - B)\theta_t p(e) > 0$ as $B < x$.

Thus in both cases D is the optimal strategy for the agent. If 'qL' is not sufficiently high such that $\{B - qL\}\theta_t p(e^{**}) - d(e^{**}) < 0$, (A,e) is the optimal strategy for the supervisor. Hence Nash equilibrium results bribery as a solution.

The above result is derived on the basis of the existing setup in India where, by being honest and not accepting a bribe supervisor does not gain monetarily. Suppose now we introduce a reward scheme for the supervisor for reporting after detection, will it improve the chance of complying with the law?

A Penalty- Reward Scheme

Let us assume that while an agent who does not comply with law needs to pay a penalty αx, the supervisor in turn gets a proportion λ of the penalty as a reward , given by $\lambda\alpha x$; $\lambda \leq 1$, such that the reward can be financed by the penalty received . Alternatively, however, a corrupt agent can pay the supervisor an amount B (as a bribe[10]) for not reporting the crime.

Given this revised framework let us now look at the pay-offs corresponding to different strategies available for the supervisor and the agents. As before, an agent can be honest (H) i.e. , s/he is not involved in any corrupt activities, or can be dishonest (D) , i.e., can be corrupt and ready to pay a bribe as and when necessary. The supervisor's strategies are either not to accept a bribe and opt to report (NA) or, to accept a bribe (A) for not reporting the crime after detection. In this set-up if the supervisor knows the type of an agent as t[11] and plays (NA, e), i.e., s/he does not accept a bribe and puts effort level 'e' for detection of a crime and the agent plays D , then the expected pay-off to the agent is remains same as (1) above.

The supervisor's pay-off is :

$$H(e) = \lambda\alpha\ x\ p_t(e) - d(e) \quad \text{.....(4)}$$

If the supervisor is successful in detecting the crime (which has a chance $p_t(e)$) s/he earns a reward $\lambda\alpha\ x$, but the effort creates disutility to the extent of $d(e)$. Note that (2) is a concave function of e (fig 2).

An agent would play D only if it gives him/her some positive returns, i.e., his/her expected pay-off derived in (1) above were positive. Thus solving (1) > 0 we get[12]:

$$p_t(e) = \theta_t\, p(e) \leq 1/(\beta+1) = 1/\alpha \quad \text{.....(5)}$$

Thus, if the supervisor puts a very high effort level (in particular from (5) above we get if $e > p_t^{-1}(1/\alpha)$, the agent would not try to be engaged in any unlawful activities.

The supervisor would try to maximize his/her pay-off by appropriately choosing the effort level and hence his/her (unconditional) optimal effort level would be derived from maximizing his/her pay-off with respect to the effort level

$$Max_e \{\lambda\alpha x\, p_t(e) - d(e)\}$$

$$= \lambda\alpha x\, p_t(e_{max}) - d(e_{max}) = H(e_{max}), \text{ say, } \quad \text{.....(6)}$$

where, $p_t(e_{max}) = \theta_t\, p(e_{max})$.

However, if $e_{max} > p_t^{-1}(1/\alpha)$ [fig2] , a type t agent will play H (see (5)) and hence the resulting pay-off for the supervisor would be 0. In other words a high enough effort level on the part of the supervisor will make the agent to be honest. As a result it will not be possible for the supervisor to collect any reward since there was no crime committed.

Therefore, the optimal effort for the supervisor, if s/he wants to report and earn reward would be, $min\ (e_{max}, p_t^{-1}(1/\alpha)) = e^*$, say.....(6a)

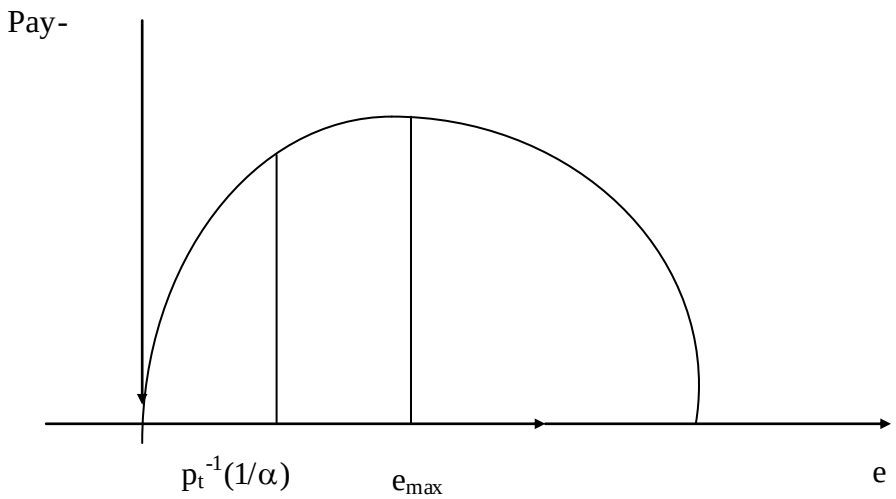
On the other hand if the agent plays D i.e., opts to be corrupt and the supervisor opts for A (accept a bribe), a possibility of a bribe (B) emerges[13]. Computing the agents' pay-off in a fashion similar to that of (1) we arrive at the following condition:

$$x(1-\theta_t\, p(e)\,) + (x-B)\,\theta_t\, p(e) > 0$$

$$p_t(e) = \theta_t\, p(e) \leq x/B \;\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(7)$$

which is always true when $B < x$.

Fig 3 : Optimal Effort Level



As discussed above (see (3)) supervisor's optimal effort level would be such that

$$Max_e\ \{ B - qL\}\theta_t\, p(e) - d(e)$$

$$= (B - qL)\ \theta_t\, p(\, e^B_{max}) - d(e^B_{max}) = G(e^B_{max}), \text{ say.}$$

Given (7), the supervisor's optimal effort would be $e^B_{max} = e^{**}$.

Remark1 : With regards to bribe it can be easily shown that there exists a 'λ' such that reporting is optimal after detection[14]. Thus it is possible to ensure reporting by fixing an appropriate λ . However , the supervisor would select his/her effort level e^* such that crime is committed and s/he gets the reward. Therefore, compliance with law cannot be ensured. Thus we have the following result (see also Marjit, Rajeev *et al (*2000) and Rajeev (2003))

Proposition 2 **:** In the above set-up non compliance of law on the part of the agents cannot be stopped even though it may be possible to prevent the bribery solution by announcing an appropriate λ (i.e., (NA ,D):(supervisor, agent) would be a solution).

Remark2: Here we have the underlying assumption that a supervisor is in charge of a particular locality for a long enough time to have *complete information* about the agents' types and can develop a reputation regarding his/her *strictness* in detecting violation of law, and s/he can *commit* differentiated effort level for every agent s/he confronts. Failure to control non compliance in this set-up is due to the fact that the supervisor gets a reward only when the violation of labour law occurs and s/he, therefore, ensures the occurrence of the same by choosing an appropriate effort level for each agent.

Incomplete Information

Let us now consider a situation where the supervisor does not have complete information about the agents (i.e., the supervisor cannot individually identify each agent's type but has an idea about the distribution of the agents according to their types) and in view of Remark 2 ask whether a lack of agent specific knowledge on the part of the supervisor can help proper implementation of the act. One of the policies through which such incomplete information may be ensured is , by *transferring the supervisor regularly* so that s/he cannot establish a long term relation with the agents.

Suppose the distribution of agents according to their types is denoted by f(θ) where, $\int_{\theta T}^{1} f(\theta)\, d\theta = 1$ and N is the total number of agents (we recall that θ_T and 1 are the indices for the most experienced and the least experienced agents respectively and hence the boundary values for θ) . The supervisor chooses his/her optimal effort level by maximizing his/her expected pay-off function w.r.t 'e'.

$$Max_e\, \Phi(e) = Max_e\, \{N\lambda\alpha x \int_{\theta T}^{f(e)} (\theta p(e))\, f(\theta)\, d\theta - Nd(e)\} = \Phi(\underline{e}), \text{ say} \ldots\ldots\ldots\ldots\ldots\ldots(8)$$

Note that in a complete information case a supervisor individually identifies each agent and hence can commit appropriate effort levels for each one. In an incomplete information situation however, the supervisor needs to choose a uniform effort level for all agents and hence s/he needs to maximize a general function like (8). Maximization of (8) with respect to 'e' will give us an optimal effort level for the supervisor which will be uniform for all agents since now s/he does not have agent specific information. This uniform effort level $\underline{e}$ can be high enough for the less experienced agents leading them to choose H, because the less experienced agents by definition have higher chances of getting detected if the supervisor is strict.

Thus, $\underline{e}$ gives us a measure of the extent of corruption if the supervisor opts to report crime. Using (1) above we get that all agents for whom $x\{1-\theta_t\, p(\underline{e})\} - x\beta\theta_t\, p(\underline{e}) < 0$, would not indulge in evading law[15]. Thus a partial control of corruption becomes possible. However, one of the limitations of this result is that it holds for selected 'f' functions (see Marjit, Rajeev *et al*, 2000). We therefore search for alternative schemes that may ensure compliance with law.

An Alternative Penalty-Reward Scheme

Let us now formulate an alternative criteria for imposing penalty or reward on a supervisor which is independent of the fines collected. Let there be an independent mechanism[16] through which the workers can registrar confidentially their grievances relating to unlawful practices by the principal employer or the supervisor. If the number of complaints C is below a particular lower bound C_1 the supervisor gets a reward R and if they are above a pre-determined upper bound C_2 s/he gets a penalty P. However, if C lies within C_1 and C_2 s/he gets $\lambda\alpha x n_1$, where n_1 is the number of principal employer fined. Further this rider is extended even when C is greater than C_2. This provision is essential to guard against an agent harassing a supervisor. For simplicity we assume a complete information case. Thus the pay-off function for the supervisor can be written as:

$$M(C) = R \text{ if } C < C_1$$
$$= \lambda\alpha x n_1 \text{ if } C_1 \leq C \leq C_2$$
$$= \lambda\alpha x n_1 - P \text{ if } C > C_2$$

Under this new penalty-reward scheme, if the supervisor does not perform his/her duty, presumably workers will complain and s/he would get a penalty P. Thus under bribery option supervisor's total pay-off from all agents would be

$n\Sigma_{t=1}^{T}\{ (B- qL)\ \theta_t\ p(e^{**}) - d(e^{**})\}- P$

If s/he opts to report the corrupt activity with optimal effort e* defined above (e*'s are the respective optimal effort level relevant for each type[17]), s/he gets

$n\Sigma_{t=1}^{T}\{\lambda\alpha x\ p_t(e^*) - d(e^*)\}- P$

From Remark1 it is clear that there would always exist a λ such that reporting is better than taking a bribe.

Now consider the case of getting a reward R. Suppose, if nr firms are honest then corruption level will be less than C_1. Suppose we fix R at a level such that

$n\Sigma_{t=1}^{r}\{\lambda\alpha x p_t(e_{max}) - d(e_{max})\}< R- \Sigma_{t=T-r}^{T} d\ (p_t^{-1}(1/\alpha)+ \varepsilon))$ ……..(9)

$\varepsilon > 0$, however small, then we have the following result.

Proposition 3: Given the above framework, under condition (9) partial adherence to law can be ensured.

Proof: Consider a type t agent and a type t+1 agent and a supervisor opting to report and get a reward $\lambda\alpha x$. As $p_t(e) > p_{t+1}(e)$, for any specific e, the pay-off curve (for the supervisor, i.e., $\lambda\alpha x\ p_t(e) - d(e)$) corresponding to a type $t+1$ agent would lie below that of a type t agent. In particular, the optimal pay-off for the supervisor from a type t agent would be greater than that from a type $t+1$ agent, i.e.,

$\lambda\alpha x\ p_t(e_{max}) - d(e_{max}) >\lambda\alpha x p_{t+1}(e_{max}) - d(e_{max})$

Therefore, by taking reward from any nr agents the supervisor cannot earn higher than

$n\Sigma_{t=1}^{r}\{\lambda\alpha x\ p_t(e_{max}) - d(e_{max})\}$……..(10)

On the other hand if the supervisor opts for an independent reward R, s/he has to make nr agents honest by putting effort $p_t^{-1}(1/\alpha)+ \varepsilon,\ \varepsilon> 0$, however small. In such a case his/her

total pay-off $\geq R- \Sigma_{t=T-r}^{T} d\ (p_t^{-1}(1/\alpha)+ \varepsilon)$…….(11)

as higher the type of an agent it needs higher effort on the part of the supervisor to make him/her honest. Comparing (10) and (11) we get condition (9).

The rest $n(T-r)$ firms can still be engaged in corrupt activities. In such case the supervisor can either report or not report. As reporting does not ensure an additional reward, bribery from the rest of the agents is an optimal solution. This reveals that under the given penalty-reward scheme partial control of corruption is possible.

Conclusion

This survey based study reveals the futility of amending any act without ensuring proper implementation of the already existing provisions. It is observed that collusive agreements between various agents often result in the exploitation of contract labour. As the existing system does not provide any incentive to the supervisor to detect and prevent unlawful practices, collusion involving bribe becomes an optimal and natural solution. The paper has examined the effectiveness of various penalty–reward scheme to ensure proper implementation of the act and has observed that if not total, at least partial control of unlawful activities is feasible. However, to be able to do this, it is necessary to make the workers aware of their rights and responsibilities so that they are able to detect violation of law. Further, it is necessary to facilitate the workers to complain to an independent authority in a

confidential manner; and giving punishment or reward to a supervisor on the basis of such complaints is a more effective way of combating corrupt practices. A Penalty or reward to a supervisor on the basis of the fines collected by him/her is not a useful solution.

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End Notes

[1] Though the table do not show all the years , it is a general trend.

[2] Interview by Agnes Khoo, Program Officer of the Committee on Asian Women, 1997, www.cld.org.

[3] Contract Labour Regulation and Abolition Act, 1970.

[4] A casual labour does not get employed through a contractor. Though his/her appointment may be not permanent, s/he has direct contract with the principal employer.

[5] Through our pilot survey we observed that a subsidiary of a large multinational company, irrespective of employment size or investment ,has similar wage and benefit policies to the parent company.

[6] Revealed during our survey of the contract agencies and workers.

[7] See also Basu (1992) and Mookherjee and Png (1995).

[8] The corrupt agents can very well be the contractors. However, modeling will be very similar in that case and hence we concentrate on the principal employers only.

[9] In other respects like size and structure of employment, we assume them to be identical.

[10] This is surely not the only possible penalty-reward scheme. One can conceive of a scheme where a supervisor may be punished and evaluate the implications.

[11] This may be possible if s/he is in charge of a locality for a long enough time.

[12] $x\{1- p_t(e)\} + (x - \alpha x)\ p_t(e)=0 \Rightarrow x- x\, p_t(e) + x\, p_t(e) - \alpha x\ p_t(e)=0 \Rightarrow x- \alpha x\ p_t(e)=0 \Rightarrow 1/\alpha = p_t(e)$.

Thu,s when $1/\alpha = p_t(e)$, the agent's pay-off is zero.

[13] Monitoring or investigation of crime (see Mookerjee and Png (1992)) may not be effective in such cases as hierarchical bribery net-work can exist.

[14] This result in fact holds for a more general bribe function $B = \delta\alpha x$, $\delta < 1$. For details see Rajeev (2003).

[15] Hence the range of integration runs from θ_T to θ (e) , where, θ (e) represents the largest type index of the subset of agents who would play D at e.

[16] For example. independent complaint boxes.

[17] See 6(a). For notational simplicity we have dropped suffix 't' here.