

# **Contract Labour Act in India: A Pragmatic View**

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## *Abstract*

*In order to effectively compete in a liberalized market economy, firms require flexibility, especially in managing labour. Presently, the labour sector in India is quite restrictive with regard to labour laws. In order to surpass the stringent labour regulations, the industry is largely resorting to **contract** labourers, who are governed by the “Contract Labour Regulation and Abolition Act of 1970”. To safeguard the welfare of contract labourers, certain provisions have been made mandatory by the Act. These include payment of minimum wages, provident fund benefits and others. A primary survey carried out in one of the industrially advanced provinces of India, viz. Karnataka, reveals that many of these stipulations 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 (or the contractor) has aided the violation of law. This paper discusses some of the survey findings and formulates a simple game theoretic model to show why it is economically optimal to collude. It also examines whether any provision of reward for the labour inspector would help to protect the law and enhance the welfare of the vulnerable contract labour class.*

JEL Classification : K42

Key words: Contract labour , Principal Employer, Contract Labour Act, Collusive Agreement, Penalty-Reward Scheme.

## 1. Introduction

In this age of globalization, the employment structure across the globe has been undergoing changes. In order to effectively compete in a globalized market one needs flexibility relating to

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\* The author gratefully acknowledges financial support from Sir Ratan Tata Trust. I also thank R S Deshpande for helpful comments. Usual disclaimer applies. The paper has been presented at the First Annual Meeting of the Asian Law and Economics Association at Seoul National University, Korea.

labour, capital, or bureaucracy; this allows them 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 Bangladesh for example, globalization is found to reduce the number of employees working under permanent contracts and to create non- traditional employments structures including part time , casual and contract labour (Khan, 2005)<sup>1</sup>. In the context of the Philippines, Mc Govern (2005)<sup>2</sup> mentions that “...labour flexibilization is used synonymously with contractualization or casualization of labour”. In India too we observe an increasing use of casual labour over time (table1).

Table 1 Distributions of workers (usual status)  
by category of employment (percent) : India

Year	Self Employed	Regular Salaried	Casual
1977-78	59.9	13.9	27.2
1987-88	56.0	14.4	29.6
1993-94	54.8	13.2	32.0
1999-00	52.9	13.9	33.2

Source: Deshpande *et al*, 2004<sup>3</sup>

Theoretical models in economics in this context reveal that labour regulations will typically create adjustment costs in hiring and firing labour and in making adjustments in the organization of production. One should therefore expect the formal sector to keep away from permanent labour (thereby reducing regular employment) and move towards other labour saving inputs (including capital). Besley and Burgess (2002), while empirically examining the effect of labour regulation on performance of the industrial sector in Andhra Pradesh , India, argue that

<sup>1</sup> Khan, Akhter Sobhan, 2005, Impact of Globalization on Labour Market and Workers, Challenges and Opportunities: Trade Union Action, Bangladesh Institute of Labour Studies, [www.globalnetwork-asia.org](http://www.globalnetwork-asia.org).

<sup>2</sup> McGovern L. L. , 2005, Neo-liberal globalization in the Philippines: Its impact on Filipino women and their forms of resistance, 2005 Women and Globalization Conference Paper, [www.globaljusticecentre.org/papers2005](http://www.globaljusticecentre.org/papers2005).

<sup>3</sup> This table has been compiled using various NSSO surveys on employment and unemployment

regulations do lower the firm's optimal output level since they tend to raise the marginal cost of production. By increasing the bargaining power of workers, labour regulations can increase the possibility of hold-up problems in investment. Further, one would also expect regulation to have a negative impact on the desire to register and thereby to increase the number of unregistered firms where, labour laws are usually not pro-worker.

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<sup>4</sup> remarked that such contractualization 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<sup>5</sup> as one who is hired in connection with the work of an establishment by a principal employer through a contractor. While a contractor tries to produce the given results with the help of contract labour for the organisation, a principal employer is the person responsible for the control of the establishment. The contract labour act makes certain provisions for the welfare of the contract labour class. They include payment of minimum wages, certain health and sanitation facilities in the work premise, provident fund benefits and so on. In order to ensure that such norms are complied with, labour inspectors are engaged in supervision.

One often argues that in addition to the law being under-protective, it is not only hard for workers in this form of employment to prove their identity as workers under the labour law, but employer-employee relationship is also not easy to establish (Kumar,2002). However, before voicing an amendment of the law it is essential to examine whether, whatever little is ensured by the law is adhered to in practice. Concentrating 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

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<sup>4</sup> Interview by Agnes Khoo, Program Officer of the Committee on Asian Women, 1997, [www.cld.org](http://www.cld.org).

<sup>5</sup> Contract Labour Regulation and Abolition Act, 1970.

hardly be worse” Theron(2002). In Bangladesh too Khan (2005) observes that labour laws are not implemented in most of the privately owned industries.

Given this background it is crucial to examine how far the existing laws are implemented especially by the private sector enterprises. In order to study this a survey of contract workers employed in the formal manufacturing sector has been carried out. The survey conducted in one of the industrially advanced provinces of India, viz. Karnataka, reveals that many of these stipulations are not followed in practice. Our field survey further reveals that collusive agreement between the inspector- the protector of law, and the principal employer (or the contractor) has often aided the violation of the law. This paper discusses some of the survey findings and formulates a *simple game theoretic model* to show why it is economically optimal for the inspector and the employer to collude. It also examines whether any provision of reward for the labour inspector would help to protect the law and enhance the welfare of the vulnerable contract labour class.

Given this background, the next section discusses the Contract Labour Act 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 following 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.

## 2. Contract Labour Regulation and Abolition Act, 1970

### Purview of the Act

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. The act however, does not apply to the establishments in which work is intermittent or casual in nature. While the decision regarding whether the work is of casual nature or not rests on the appropriate government, if the work is carried out on more than 120 days in a year it cannot be considered as intermittent.

### Appropriate Government

The Central Government constitutes an advisory board called the Central Advisory Contract Labour Board to decide on matters arising from the administration of this Act. The Central Advisory Board, a tripartite body, holds meetings and considers various issues, in particular those relating to the abolition of the contract labour system in certain establishments. Similarly, the State Government also constitutes a State Advisory Contract Labour Board. The jurisdiction of the Central and State Government boards has been laid down by the definition of the ‘ Appropriate Government’ in Section 2(1) (a) of the Act as amended in 1986.

### Registration and Licensing

Every principal employer to whom this act applies should register his establishment in the prescribed manner for employing contract labour. If Government at any point of time is dissatisfied with the practices followed, it can revoke the registration of an establishment. In addition, Government may, after consultation with the Central Board or the State Board, prohibit employment of contract labour in any process, operation, or other work in an establishment. The contractor to whom this act applies, also necessarily has to get a license for his operations from a licensing officer, and this needs to be renewed from time to time. A dissatisfied licensing officer has the power to revoke or suspend a license.

### Provisions for Workers

For the health and welfare of contract labourers certain provisions have been made mandatory by the Contract Labour Act. Amongst other things, facilities required to be provided under sections 18 and 19 of the Act are sufficient supply of wholesome drinking water and a sufficient number of latrines and urinals. If contract labourers are required to halt at night in connection with the work, the contractor is bound to provide hygienic rest rooms and separate rooms for women workers. If the number of contract workers in an establishment exceeds 100, canteen facilities need to be provided as well. The Act delineates the necessary maintenance conditions of the canteen. First-aid facilities should also be available to the contract workers with a person trained in first aid in attendance.

It is the primary responsibility of the contractors to provide all the facilities to the workers as delineated in the Act. However, if the contractor fails to provide these facilities, the responsibility falls on the principal employer to provide the same within 30 days of the expiry of the time allowed to the contractor.

### Wages

A contractor has the freedom to choose the wage period in which the wage is payable. However, no wage period can exceed one month and wages have to be paid directly to the worker within the tenth day after the last day of the wage period. Usually wages have to be paid without any deductions of any kind. 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 the disbursement of wages in the presence of such an authorized representative. The authorized representative of the principal employer shall record under his signature a certificate at the end of the entries in the register of wages and all registers are required to be maintained as per the Act.

### Prohibition

Apart from the regulatory measures provided under the Act for the benefit of the contract labour, the 'appropriate government' under section 10(1) of the Act is authorized after consultation with the Central or State Board to prohibit employment of contract labour in any establishment in any process operation or other work. Such restrictions are often decided on the following basis.

- whether the work is perennial in nature;
- whether the work is incidental or necessary for the work of an establishment;
- whether the work is sufficient to employ a considerable number of whole time workmen;
- whether the work is being done ordinarily through regular workmen in that establishment or a similar establishment.

The Central Government on the recommendations of the Central Advisory Board has prohibited employment of contract labour in various operations and categories of jobs in different establishments. More than 45 notifications have already been issued in this regard.

### Enforcement

In the Central sphere, the Central Industrial Relation Machinery (CIRM) has been entrusted with the responsibility of enforcing the provisions of the Act. Field Officers conduct regular inspections to detect violations of the provisions of the Act.

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, contract labour often does not get their 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.

## **2.1 The Core & non-core divide and Amendments of the Act**

A set of perennial or core activities is defined in terms of what a company had declared as its main activities during 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 of 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 an amendment.

## **3. Implementation of Contract Labour Act: A survey based analysis**

### **3.1 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<sup>6</sup>)
- d) small manufacturing companies (less than 100 employees and/or investment less than 1 crore)

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

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<sup>6</sup> 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.

contract workers of the unit are interviewed. The number of companies selected from each of these subgroups is in proportion to the number of companies in the group. Though most of the companies selected are from Bangalore, we have also taken companies from other parts of Karnataka such as Mangalore, Mysore etc (see Rajeev and RoyChowdhuri, 2005, Rajeev ,2006).

As often experienced by economists working in this field (Deshpande *et al.*,2004), collection of data regarding contract labour is found to be extremely difficult due to lack of cooperation from firms. Managements of firms are often secretive about the number of contract workers used and the benefits provided to them. As a result, we had to stand in front of the companies and wait for the workers to come out after their duty hours. At that time the weary and exhausted labourers were often in no mood to participate in our investigation, from which they did not foresee any direct benefit. Though we first planned to divide the population into several strata incorporating different features of contract labour, e.g., type of job they are engaged in etc., the problems faced in the pilot survey compelled us to use only a very simple sampling technique. A structured questionnaire is used to interview the employees and the data are later processed and analysed using the SPSS package.

Job type wise the sampled labourers follows the following distribution pattern (table3).

Table3 Percentage of workers classified according to the job type

Type of Job	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

Thus we observe that 10% of the employees are in technical jobs 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).

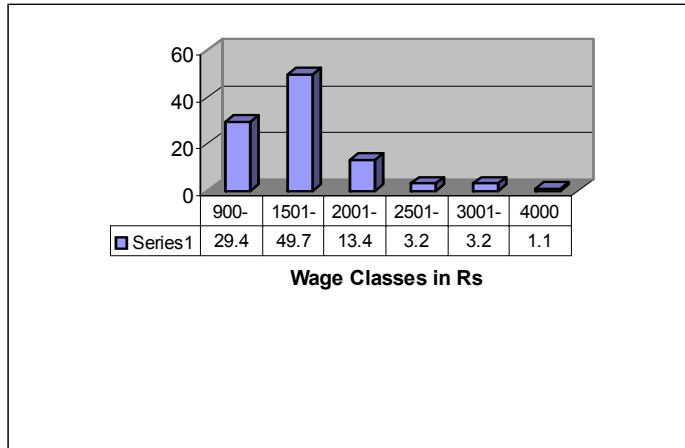


### **3.2 Survey Findings**

#### ***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 we observe that the majority of employees earn below Rs 2000. Only 1% of the employees earn Rs 4000 or above, while almost all regular employees earn over Rs 6000. (Fig.1).

Fig 1 Percentage of employees with different wage levels



Source: Compiled from Field Survey

Table 4 Percentage of employees classified according to hours of overtime work

Hours of overtime per week	Percentage (%)
0	32.1
3	1.9
6	7.5
8	17
10	3.8
12	9.4
15	1.9
20	11.3
24	1.9
25	7.5
26	1.9
30	3.8

Source: Field Survey

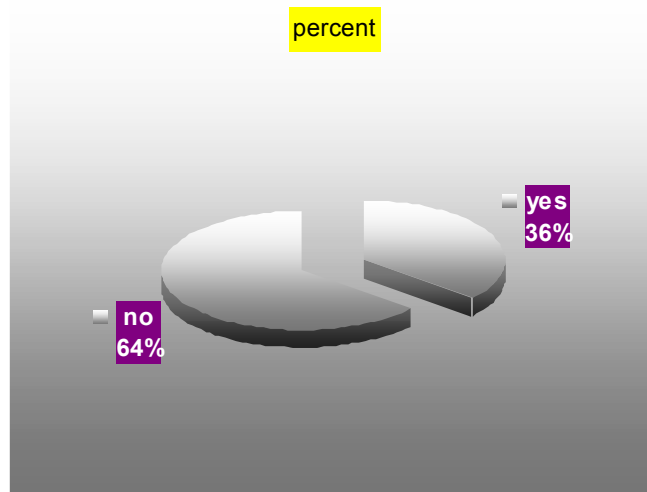
Though contract labour is often paid the minimum wage, it is the *overtime payment* through which contractors usually try to extract additional incomes for themselves by taking advantage of the vulnerability of contract employees. While regular hours of work for contract workers is uniformly reported by all as eight hours per day, most of the employees are also engaged in overtime work (Table 4). 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. Figure2 depicts the scenario where,

Fig2 Percentage of contract workers who changed jobs and collected previous PF due.



Source: Compiled from Field Survey

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.

### ***Problem of unregistered agencies***

The survey also indicated that there are a large number of un-registered contract agencies in Karnataka. Possibly due to this reason the data from the department of labour on contract worker show that the number of contract agencies has declined in Karnataka since 2001 (Table 5), which from our survey of the contract agencies and principal employers revealed to be false.

Table 5 Contract Labour in Karnataka

Year	Total number of registered principal employer	Total number of licensed contractor	Number of contract worker covered by the act
1998	2345	6846	310825
1999	2555	7700	301142
2000	2848	8315	315969
2001	2836	5345	252165
2002	3138	5403	253016

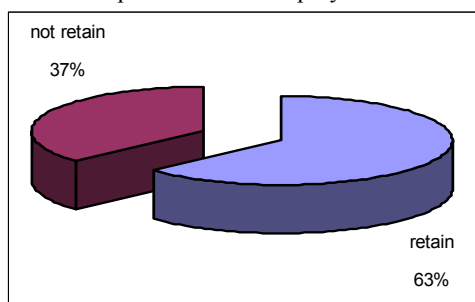
Source: Department of Labour, Karnataka

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. More precisely, a registered contract agency usually need to pay around 8% of total revenue as service tax, 4% as professional tax, 13.5% provident fund benefits to the workers and 4% Employees State Insurance (ESI) benefits. Therefore, when a registered company tries to compete with an unregistered one, only possibility appears to be to exploit the labour as they are in excess supply.

### ***Marks Card as a Collateral***

While recruiting a contract worker an agency needs to provide him with a uniform that is often charged for by the small and medium agencies, in installments deducted from his salary. Till the total cost is retrieved from a worker he is supposed to deposit some collateral and, from these penniless workers, usually the original marks card is

Fig 3 Percentage of companies that retain marks card as a deposit from the employees



Source: Compiled from field survey

taken for this purpose. Often a worker not happy with an agency quits the same and acquires employment through another agency leaving his original marks card behind. In fact, we have come across an agency holding as many as 500 original marks cards with them. How legal is this practice is a question. However, 63% of the agencies confessed having retained the marks card till they could recover the cost of the uniform from the employees through the cuts in their salaries (Fig.3).

### ***Excessive Competition Leading to Collusive Agreements and Corrupt Practices***

Economic theory tells us that competition brings efficiency and in the case of contract labour this efficiency is manifested in corruption. 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<sup>7</sup>. 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% 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.

*Thus, there is no denying of the fact that there are sensible provisions in the Contract Labour Act, but the problem is proper implementation.*

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<sup>7</sup> Revealed during our survey of the contract agencies and workers.

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.

#### 4. 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).

##### 4.1 The Model:

The model under consideration is that of Marjit, Rajeev and Mukherjee (2000)<sup>8</sup>. Suppose that the economy consists of  $n$  potentially corrupt agents, in this case the agents may be the principal employers<sup>9</sup> 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 to do so.

The agents are different from each other with respect to their *abilities to avoid detection* by the supervisor<sup>10</sup>. This assumption is incorporated on the basis of our survey finding that some of the principal employers use various ingenuous tactics like maintaining two registrars to avoid detection by the labour inspector.

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<sup>8</sup> See also Basu (1992) and Mookherjee and Png (1995).

<sup>9</sup> 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.

<sup>10</sup> In other respects like size and structure of employment, we assume them to be identical.

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  $\theta$  ( a real number) belonging to the interval  $[\theta_T, 1]$ , where the type  $T$  agents would be indexed by  $\theta_T$  and the type 1 agents by 1. In general if  $\theta_t$  is the index for a type  $t$  agent and  $\theta_{t+1}$  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. Thus, if the supervisor puts an effort  $e$  to catch an agent whose type is indexed by  $\theta$ , the chance of the former being successful is denoted by  $\theta p(e)$ , 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  $\theta$  and hence will show a higher chance of getting detected. In particular, the probability of detecting a type  $T$  agent is  $\theta_T p(e)$  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:

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

The first two conditions imply that the probability of detecting a crime increases with the increase in effort level given by the supervisor, however, 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  $\alpha$  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 :

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

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  $\alpha x$ . 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 :

$$H(e) = - d(e) \dots \dots \dots (2)$$

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*

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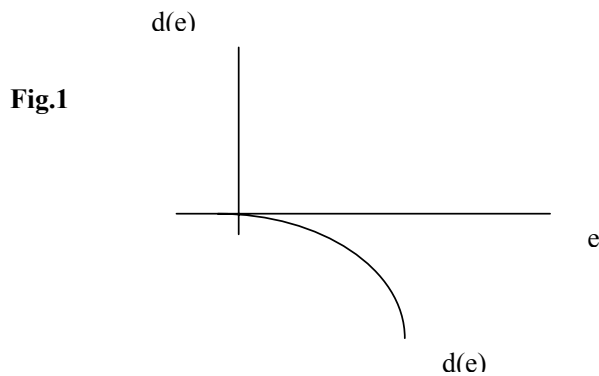
which essentially depend on the social consciousness as well as alertness and honesty of the reporting and judiciary system. Hence whenever the supervisor takes a bribe  $B$ , there is always a chance to getting caught later and incur an expected loss  $qL$ . Thus his/her net pay-off from such an activity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

$$\text{Max}_e \{ B - qL \} \theta_t p(e) - d(e) \dots \dots \dots (3)$$

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 1 below shows that the optimal effort level is 0 for the supervisor (see equation (2) above.



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

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

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?

#### 4.2 A Penalty- Reward scheme

Let us assume that while an agent who does not comply with law needs to pay a penalty  $\alpha x$ , the supervisor in turn gets a proportion  $\lambda$  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)<sup>4</sup> 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

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<sup>4</sup> 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.

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 :

$$H(e) = \lambda\alpha x p_t(e) - d(e) \dots\dots\dots(4)$$

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<sup>6</sup>:

$$p_t(e) = \theta_t p(e) \leq 1/(\beta+1) = 1/\alpha \dots\dots\dots(5)$$

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

$$\begin{aligned} & \text{Max}_e \{ \lambda\alpha x p_t(e) - d(e) \} \\ & = \lambda\alpha x p_t(e_{\max}) - d(e_{\max}) = H(e_{\max}), \text{ say, } \dots\dots\dots(6) \end{aligned}$$

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.

<sup>11</sup> This may be possible if s/he is in charge of a locality for a long enough time.  
<sup>6</sup>  $x \{ 1 - p_t(e) \} + (x - \alpha x) p_t(e) = 0 \Rightarrow x - x p_t(e) + x p_t(e) - \alpha x p_t(e) = 0 \Rightarrow x - \alpha x p_t(e) = 0 \Rightarrow 1/\alpha = p_t(e)$ . Thus when  $1/\alpha = p_t(e)$ , the agent's pay-off is zero.

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<sup>7</sup>. Computing the agents' pay-off in a fashion similar to that of (1) we arrive at the following condition:

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

$$p_t(e) = \theta_t p(e) \leq x/B \text{ .....(7)}$$

which is always true when  $B < x$ .

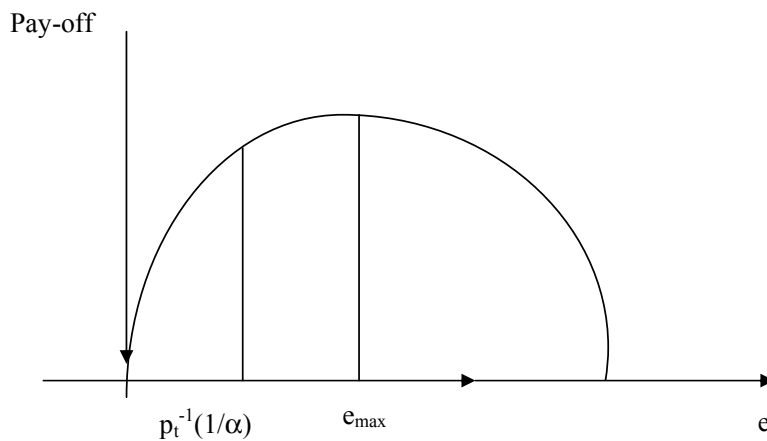


Fig2

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

$$\text{Max}_e \{ B - qL \} \theta_t p(e) - d(e)$$

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

<sup>7</sup> Monitoring or investigation of crime (see Mookerjee and Png (1992)) may not be effective in such cases as hierarchical bribery net-work can exist.

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

**Remark1 :** With regards to bribe it can be easily shown that there exists a ' $\lambda$ ' such that reporting is optimal after detection<sup>12</sup>. Thus it is possible to ensure reporting by fixing an appropriate  $\lambda$ . 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  $\lambda$  (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 violation of labour law occurs and s/he therefore, ensures the occurrence of the same by choosing an appropriate effort level for each agent.

### 4.3 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 Remark2 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.

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<sup>12</sup> This result in fact holds for a more general bribe function  $B = \delta\alpha x$ ,  $\delta < 1$ . For details see Rajeev (2003).

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

$$\text{Max}_e \Phi(e) = \text{Max}_e \{N\lambda\alpha \int_{\theta_T}^{\theta(e)} (\theta p(e)) f(\theta) d\theta - Nd(e)\} = \Phi(\underline{e}), \text{ say} \dots \dots \dots (8)$$

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  $\alpha\{1 - \theta_T p(\underline{e})\} - \beta \theta_T p(\underline{e}) < 0$ , would not indulge in evading law<sup>13</sup>. Thus 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.

### 5. An Alternative Penalty-Reward Scheme

Suppose now we 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<sup>14</sup> through which the workers can registrar confidentially their grievances

<sup>13</sup> Hence the range of integration runs from  $\theta_T$  to  $\theta(\underline{e})$ , where,  $\theta(\underline{e})$  represents the largest type index of the subset of agents who would play D at  $\underline{e}$ .

<sup>14</sup>For example. independent complaint boxes.

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  $\lambda\alpha n_1$ , 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:

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

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

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

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<sup>15</sup>), s/he gets

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

From Remark1 it is clear that there would always exist a  $\lambda$  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

$$n \sum_{t=1}^r \{ \lambda\alpha p_t(e_{max}) - d(e_{max}) \} < R - \sum_{t=T-r}^T d(p_t^{-1}(1/\alpha) + \epsilon) \dots\dots\dots(9)$$

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

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

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<sup>15</sup> See 6(a). For notational simplicity we have dropped suffix 't' here.

**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

$$n \sum_{i=1}^r \{ \lambda\alpha x p_t(e_{max}) - d(e_{max}) \} \dots \dots \dots (10)$$

On the other hand if the supervisor opts for an independent reward  $R$ , s/he has to make  $nr$  agents honest by putting effort  $p_i^{-1}(1/\alpha) + \epsilon$ ,  $\epsilon > 0$ , however small. In such a case his/her total pay-off  $\geq R - \sum_{i=1}^r d(p_i^{-1}(1/\alpha) + \epsilon) \dots \dots \dots (11)$

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.

## 6. 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 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 solution. The paper examines the effectiveness of various penalty-reward scheme to ensure proper implementation of the act and observes 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 able to detect violation of law.



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