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Methods of Realizing Equal Pay for Equal Work for Temporary Employees in China

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Abstract
It is significant and complex to solve the problem of unequal pay for equal work between the temporary workers and the reference employees. The paper believes decision of temporary workers' remuneration involves in labor pricing and internal human capital pricing in employment service agency. Comparing with the internal human capital pricing subordinating to micro human resource management, labor pricing is subject to market mechanism with bargaining or tendering and bidding as main price formation mechanisms. The paper explores the feasible approaches to pay temporary workers more equally in the case of bargaining or tendering and bidding and make suggestions for raising centralization degree and specialization degree of employment service agencies and giving more preferential policies to temporary workers.

Key words: Unequal pay for equal work; Temporary workers; Labor pricing; Bargaining mechanism; Tendering and bidding mechanism

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INTRODUCTION
In recent years, the employment service industry has developed rapidly. As a result, about sixty millions of labors dispatching workers were working at employing units in China in 2011[1]. If considering the labors trusting theirs organizational affiliation to mobile staff service agencies (called as labor relation consigners) and the ones employed by labor contractors, labor subcontractors and other organs supplying implicit job referral (named as labor workers), the quantity of temporary employees would break one hundred million. Along with its development, unequal pay for such temporary workers has become increasingly prominent. According to CTG China (Employment Services Industry) Employment Index Report, the employing cost of temporary workers is equivalent to the formal labor cost 60%-70%. The fact of temporary workers' suffering from poor treatment in the aspect of labor remuneration even impedes the release of Wage Regulations[2].

In China, labor remuneration can be divided into two types based on the status of temporary workers. One is regarded as wage. Employment-type of dispatching workers or labor relation consigners get wages though concluding labor contract with labor dispatch agencies or with employing units respectively. The other is classified as labor remuneration. Labor workers are commonly employed and paid so-called labor remuneration in accordance with employment contracts[3] or with oral commitments. Standing on observations on Chinese society, most of temporary workers, except registration-

[1] See news from http://news.ifeng.com/shendu/fhzk/detail. "Position of sixty million Chinese temporary workers falls to a historic low" 2011.11.30.
[2] See news from http://politics.people.com.cn/gb/99014/15516143.html. "Too much difference from equal pay for equal work to mechanism of increasing wage result in difficulties for Wage Regulation to be drafted", 2011.8.26.
[3] In China, employment contract is subject to Civil Law in which there aren't special articles on wage/labor remuneration and regulations on principle of equal pay for equal work.

type of dispatching workers[4], are confronted with remuneration discrimination.

In China, there are two points of views on unequal payment for temporary workers. One view is that different remuneration problem is difficult to be solved because of the attraction to employing units derived from low labor cost and the dual-track employment system[5] (Su, 2008). The other view is that labor workers should have the right of equal pay by law. Hence, solutions to the problem must be found. The main efforts are as follows: (1) to attempt to solve the problem through adjustment of legislation. For example, trying to determine standards of "equal work" and "equal pay" more explicitly; increasing employers' burden of proof by adopting of "shifting of burden of evidence"; designing of far more severe punishment procedure aiming at unequal pay for temporary workers and etc. (Shen, 2008). (2) to explore new ways from employing units' human resource management. "equal pay for equal post", "equal pay for equal output" or "same wage distribution mechanism for same post" is proposed. (3) to attempt to avoid unequal pay. Suggestions include that allocating temporary workers only in the same type of posts; attempting to reduce the wage level of staff working at monopolistic organizations to a rational scope; only using temporary workers in the adjuvant or replaced posts and etc..

The previous observations and researches indicate the complexity and significance of equal pay problem for temporary workers. This paper will probe into this problem again from the perspectives of labor transaction game.

1. LABOR PRICING AND LABOR REMUNERATION COMPARISON

In contrast with the process of reaching wage contract with so-called regular workers in micro-organization, formation of temporary workers' remuneration includes two steps, one is labor pricing and the other is internal human capital pricing by employment service agency with the former becoming constraint on the latter. In China, most of temporary workers can be regarded as homogeneous ones because they mainly provide ordinary labor, and this is convenient for us to build model. Since labor price formation for temporary workers is either through bargaining or through tendering and bidding, the following discussion will be made along two approaches.

1.1 Remuneration Comparison Based on Bargaining Mechanism

Assume labor transaction occurs between some employing unit and some employment service agency. On this condition, the two parties can reach agreement by bargaining with finite times.

Firstly, assume that an employing unit intends to purchase some labor services, set v_P, l_P and ω_P as employing unit's private value on the labor services, the estimated employment quantity and reference worker's wage respectively, and then we have $\varpi_p = \frac{v_p}{l_p}$.

Secondly, calculate the labor price based on bargaining mechanism. According to Rubinstein-Stahl Alternating Offer Model (Zhang, 2001), the nature of the labor transaction is that employment service agencies (named as P1) and employing unit (named as P2) bid by turns to allocate the distributable funds v_P. Because of the division of v_P, the labor price based on bargaining must be lower than employing unit's estimated value on the labor services which it intends to buy.

Every bargaining process can be divided into odd-numbered time and even-numbered time, namely t time and T time respectively (the initial time is recorded as 1). Presume it is P1 who gives a bid firstly and proposes to distribute according to the rule of $(x_t, v_P - x_t)$ (where t = 1,3,5,…, 2k-1; k is a natural number; x_t is employment service agency's sharing utility mainly subsuming income from sending temporary workers and charging intermediary fees). If P2 accepts P1's proposal, the game is over. On the contrary, if P2 rejects and the two parties are willing to have talks continuously, then the game enter T time (where T = 2,4,6,…, 2k; k is a natural number) in which role reversal takes place between the two parties and it is turn for P2 to give a counter-offer. Set δ_1, δ_2 ($0 \le \delta_i \le 1$, i = 1, 2) as the discount factor of P1 and P2 respectively[6]. If the bargaining ends at t time, P1's discount utility is $\delta_1^{t-1} x_t$, and that of P2's is $\delta_2^{t-1}(v_p - x_t)$. If the last bid is rejected, the bidding talks pass over and

[4] In China, registration-type of dispatching workers (such as hourly-paid workers, housekeepers, professional and technical personnel and so on) are usually employed by families or by mini-enterprises. In recent years, the supply of these sorts of person is so less than market demand that they can usually bargaining with employers directly and get satisfied rewards. What's more, they usually work at workplace separately, so there isn't problem of unequal pay for them due to no reference workers. Therefore, the following studies will not involve in these sorts of person.

[5] Dual-track employment system is refer that one part of employees in an employing unit are regular staff with post staffing allocated through methods of appointment, selection, or insiders' recommendation, while the other part is contrarily irregular staff without post staffing and is treated unequally or even badly.

[6] δ means the counter-biding ability of two parties. There are two extreme value for δ, that is 0 and 1. $\delta=0$ demonstrates that the player is without patience (for instance, either employee or employer is busy doing something in a hurried manner), has no counter-biding ability in the bargaining (for instance, the other party in talks is the sole and indispensable choice although one party bid exorbitantly), or bears extremely high time-delay cost (for example, labor initiate work stoppage resulting in heavy losses to make pressure on manager during the course of talks). δ=1 indicates contrarily that the player is most patient, with outstanding bargaining ability, or the time-delay cost is zero.

both of the parties' sharing utilities are zero. With previous assumptions, there are four patterns of bargaining talks, that is Pattern i: first-mover P1 and terminator P1[7]; Pattern ii: first-mover P1 and terminator P2; Pattern iii: first-mover P2 and terminator P1; Pattern iv: first-mover P2 and terminator P2. To adopt reversal regression method, we can get employment service agency's four income (named as $x_{1,1}$, $x_{1,2}$, $x_{2,1}$, $x_{2,2}$ respectively) in four bargaining patterns (Ge & Wang, 2009).

$$x_{1,1}=v_p\left(1-\delta_2+\delta_1\delta_2-\delta_1\delta_2^2+\delta_1^2\delta_2^2-\delta_1^2\delta_2^3+\ldots-\delta_1^{\frac{T-2}{2}}\delta_2^{\frac{T}{2}}+\delta_1^{\frac{t-1}{2}}\delta_2^{\frac{t-1}{2}}\right)$$
$$=v_p\left[\frac{1}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{\frac{t-1}{2}}\right)-\frac{\delta_2}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{\frac{T-2}{2}}\right)\right]$$

Let $t = T+1$; $T = 2k$, inserting t and T in Equation (1), we get

$$x_{1,1}=v_p\left[\frac{1}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k}\right)-\frac{\delta_2}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k-1}\right)\right]$$
$$\approx\frac{1-\delta_2}{1-\delta_1\delta_2}v_p \quad (1)$$

In the same way, we get

$$x_{1,2}=v_p\left[\frac{1}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k-1}\right)-\frac{\delta_2}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k-1}\right)\right]$$
$$=v_p\frac{1-\delta_2}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k-1}\right)\approx\frac{1-\delta_2}{1-\delta_1\delta_2}v_p \quad (2)$$

$$x_{2,1}=v_p\left[\frac{\delta_1}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k}\right)-\frac{\delta_1\delta_2}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k-1}\right)\right]$$
$$\approx\frac{\delta_1(1-\delta_2)}{1-\delta_1\delta_2}v_p \quad (3)$$

$$x_{2,2}=v_p\left[\frac{\delta_1}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k}\right)-\frac{\delta_1\delta_2}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k}\right)\right]$$
$$=v_p\frac{\delta_1(1-\delta_2)}{1-\delta_1\delta_2}\left(1-(\delta_1\delta_2)^{k}\right)\approx\frac{\delta_1(1-\delta_2)}{1-\delta_1\delta_2}v_p \quad (4)$$

From Equation (1) to (4), it can be seen that the price of labor transaction is influenced by the discount factor of two parties and the bidding order (Zuo, 2010 & 2011). For ease of remuneration comparison between the temporary workers and the reference employees, suppose that the employment service agency will deduct intermediary fee ε ($0<\varepsilon<rx$), r is a reasonable or general profit margin; x is the agency's income from labor transaction[8]. Then based on the homogeneity assumption, presume that employment service agency will send l_a workers (with average wage ϖ_a) to response for the labor agreement. According to forgoing equations, when agency is the first-mover, then $\varpi_{a1}=\frac{1-\delta_2}{1-\delta_1\delta_2}\frac{(v_p-\varepsilon)}{l_a}$; when employing unit is the first-mover, then $\varpi_{a2}=\frac{\delta_1(1-\delta_2)}{1-\delta_1\delta_2}\frac{(v_p-\varepsilon)}{l_a}$. Obviously, $\varpi_{a1}>\varpi_{a2}$, which means the temporary workers would get higher wage when employment service agency bids firstly than they did when employing unit bid firstly. After comparing, we can get

$$\frac{\varpi_{a1}}{\varpi_p}=\frac{1-\delta_2}{1-\delta_1\delta_2}\frac{l_p}{l_\alpha}\left(1-\frac{\varepsilon}{v_p}\right)\approx\frac{1-\delta_2}{1-\delta_1\delta_2}\frac{l_p}{l_\alpha}$$

or

$$\frac{\varpi_{a2}}{\varpi_p}=\frac{\delta_1(1-\delta_2)}{1-\delta_1\delta_2}\frac{l_p}{l_\alpha}\left(1-\frac{\varepsilon}{v_p}\right)\approx\frac{\delta_1(1-\delta_2)}{1-\delta_1\delta_2}\frac{l_p}{l_\alpha}$$

(Since ε is usually much less than v_p, such simplify can be made). It is thus clear that some factors should be adjusted as follows to reach equal pay between temporary workers and reference ones. These factors include the two parties' respective discount factor, the quantity of workers intended to be leased by the employing unit and the quantity of temporary workers intended to be sent by agency. Owing to the negligible productivity difference between the regular staff and the temporary workers, the value of $\frac{l_p}{l_\alpha}$ can be considered as 1. In that case, the value for δ_1 and δ_2 will determinates remuneration comparison results between temporary workers and reference employees. Obviously, one way to reach equal pay is to raise δ_1 or drop δ_2. Here, an extreme case is the labor transaction price and the temporary workers' remuneration would be decided only by counter-bidding ability of employment service agency (δ_1).

Concerning employment service agencies, employment service agency, positive factors affecting agency's counter-bidding ability include agency's influence in the labor transaction market, specialization of agency, conversion cost for employing unit to replacement other agencies[9], agency's market information and the incentive measures inducing agency's bargainer to endeavor to get better bargaining price and etc.. To promote these positive factor play a greater role, considerations should be given to the following approach. Measures include: (1) centralization and specialization of agencies; (2) to increase temporary workers' human capital value; (3) to improve internal performance management and motivation mechanism inside agencies. In present, the work of centralization and specialization should be carried out especially in

[7] First-mover is refer to the one who bids firstly. Terminator is refer to the one who can determine to end the bargaining.
[8] Intermediary fee can be charged in two ways. One way is to collect x yuan from every sent labor workers; the other way is to deduct x% from labor remuneration of every sent labor workers.
[9] Conversion cost includes one-time cost for change of agencies, training cost of new labor workers, time cost and etc..

the industries or fields with massive use of temporary workers, such as banking industry, coal industry, construction industry, central-governed enterprise, public sectors and so on.

With reference to employing units, the suggestion to restrain their bargaining ability is to bring pressure to them to disclose relative information on using temporary workers.

1.2 Remuneration Comparison Based on Tendering and Bidding Mechanism

The larger size of the transaction can be concluded via tendering and bidding approach. In labor tendering and bidding, employing unit (the seller of labor agreement) is always attempting to maximize its seller's surplus by mechanism design (e.g., selection of optimal tendering type; determination of bidding rules and etc.) usually, employing unit can elevate its average yield by setting designed base price. Employment service agency (the buyer of labor agreement) contrarily pays more attention to take appropriate strategies so as to win the bid and to attain maximum buyer's surplus simultaneously.

Assume the quantity of employment service agencies participating bidding is n. Set v as the parties' private value on labor agreement, among which, v_0 or v^* is employing unit's private value or the designed base price respectively; v_i (a random variable in the interval $[a, z]$ with distribution function of $F_i(v_i)$ and density function of $f_i(v_i)$ is the private value of i (i is some employment service agency). Let $P_i(v)$ represents ith probability of winning a bid and $T_i(v)$ shows its payoff expectation. Then employing unit's expectation utility is $E\sum_{i=1}^{n} T_i(v_1, v_2, \Lambda, v_n)$ if it is risk-neutral. Finally, the optimal mechanism design can be abstracted as a linear programming problem:

$$max\,\pi(P,T) = max\,E_v\left\{\sum_{i=1}^{n}\left[T_i(v) - v_i P_i(v)\right]\right\}$$

$$\sum_{j=1}^{n} P_j(v) \le 1$$

$$E_i\left[v_i P_i(v) - T_i(v)\right] \ge 0$$

$$E_i\left[v_i P_i(v) - T_i(v)\right] \ge E_i\left[v_i P_i(v, \varpi) - T_i(v, \varpi)\right]$$

As is shown in Myerson's proof, on condition of conforming to the hypothesis in Revenue Equivalence Theorem, if $v_0 = v^* - \frac{1 - F(v^*)}{f(v^*)}$, employing unit's tendering earnings would be maximum. Obviously, $v_0 > v^*$, which means employing unit's private value on labor service contract is larger than the designed base price strictly. Only the bidding in accordance with inequality of $v_i < v^* < v_0$ can employment service agency win the bid.

Similarly, let $\varpi_0 = \frac{v_0}{l_0}$ (ϖ_0 is reference worker's wage; l_0 is the quantity of reference workers in employing unit). Presume the bidding price of winning unit is v'_i. When adopting first-price sealed bid, then the optimal bidding of agency v'_{il} is equal to $v_i - \frac{\int_{\alpha}^{v_i} F^{n-1}(x)dx}{F^{n-1}(v_i)}$ (Qin, 2005); When it is second-price sealed bid, then the equilibrium bidding v'_{i2} is equal to v_i. Assume that agency sends some workers to take charge of the labor agreement. The quantity of workers is l_a and their average remuneration is ϖ_a as well. Then we can get $\varpi_a = \frac{v'_i - \varepsilon}{l_\alpha}$ (ε is intermediary fee). After comparing, we'll have $\frac{\varpi_a}{\varpi_0} = \frac{(v'_i - \varepsilon)l_0}{v_0 l_\alpha} \approx \frac{v'_i}{v_0}$ (based on the same simplify as previous subsection). Labor remunerations of temporary workers is strictly less than wages of reference employees working at employing unit in tendering and bidding mechanism because v'_i is strictly less than v_0. When bid quotation is closest to employing unit's designed base price, the minimum pay gap can be gotten.

After analysis, it is clear that there is inevitable remuneration discrimination for temporary workers when tendering and bidding process is adopted in the labor transaction. As for narrowing the pay gap, the only certainty is that temporary workers working at got bid unit could earn more if condition that quantity of bidders were limited in a narrow range could be met.

CONCLUSION

The paper emphatically studies the feasible methods for temporary workers to be paid equally by means of concept of labor price. The mathematical analysis on bargaining mechanism demonstrates that centralization and specification of employment service agencies is good for alleviation of temporary workers remuneration discrimination. The analysis on tendering and bidding mechanism indicates that unequal pay is an intrinsic derivative of the process and can not be avoided consequently. It seems that the problem of temporary workers' unequal pay can not be solved solely depending on market mechanism, so the social administrators should give more help to temporary workers by legal, administrative, economic and other means to maintain their equal pay right.

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