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Stereotypic wage and accentuation effect

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Abstract

The paper extends the work of Akerlof and Kranton [2004] on social identity and economics of organization to an adverse selection framework. The inclusion of social identity in the principal's problem alters the contracts offered to the agents. A pooling contract is a Pareto optimal contract when the agent attaches greater weight on conformity to ideal behavior prescribed by group membership. Precisely how this pooling contract is characterized depends on the ideal behavior of the agent. This result is generalized when social interaction and social influence among members of different groups are allowed. Using the concept of *accentuation effect* in social psychology, the model provides theoretical justifications for the existence of a *representative* (or *stereotypic*) *wage* for a given social category.

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1. Introduction

Labor economists have been baffled by two trends in wage determination. First, wages vary across different social groups characterized by different social backgrounds. Second, workers characterized by different types—e.g., disutility of effort—but of the same particular social category receive the same wage, on average. The class of wages that exhibit these properties are here termed "stereotypic wage".

This paper focuses on stereotypic wage determination, the influence of a worker's membership to a social category on the contracts offered by a firm under adverse selection, and the conditions under which an undifferentiated contract best described by the identity prescribed by any social group could exist.

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Stereotypic wage is not entirely new in the economic literature. It has been there even before the advent of information-asymmetry revolution. In the classical and neoclassical traditions, stereotypic wage can be safely subsumed under representative wage. In the economics of information fashion, it falls under a wider class of wage: pooling wage. But how these are derived in the context of group formation is not entirely clear.

In undergraduate microeconomics, a representative wage exists in a perfectly competitive labor market through the intersection of market demand and market supply. Normally, a representative wage is innocently assumed without proper understanding of how it came about apart from the homogeneity (and atomism) of players in the market. If the entire competitive market is taken as one social category, in which everyone shares the same identity and characteristics, then stereotypic wage and representative wage are one and the same. But if a number of social categories exist in the market so that homogeneity is relaxed, representative wage envisioned by the traditions cannot exist. Even then, in the mainstream, representative wage cannot arise when information is incomplete. In a typical adverse selection fashion in which ability types of agents are unknown, a pooling contract and/or separating contracts are possible equilibrium candidates or none at all. When a pooling contract dominates all other contracts under certain conditions and under certain instances, then nondifferentiation of wage by ability types of workers qualifies a pooling wage as stereotypical. Otherwise, stereotypic wage cannot exist. Again, in the context of social group formation, the representation of pooling wage as stereotypical is not yet clearly defined. This is the basic motivation of the paper—to explicitly model under which conditions to qualify wage as stereotypical. The discussions presented shall build on the assumption that each social group confers social identity to its members. In the main, the model presented here derives its properties from the adverse selection setup in which enough heterogeneity is introduced, e.g., ability types, which are unknown to the principal, in addition to the agents' memberships to various social groups, which are assumed to be known. The model extends the work of Akerlof and Kranton [2004] on social identity and economics of organization to an adverse selection framework.

The paper argues that the inclusion of social identity in the principal's problem alters the contracts offered to the agents. A pooling contract is a Pareto optimal contract when the agent attaches greater weight on conformity to ideal behavior prescribed by his group membership. Precisely how this pooling contract is characterized depends on the ideal behavior of the agent. This result is generalized when social interaction and social influence among members of different groups are introduced. Using the concept of *accentuation effect* in social psychology, the model provides for theoretical justifications on the existence of a representative or stereotypic wage for a given social category.

Section 2 formally introduces the model on stereotypic wage. It begins by laying out the underlying assumptions. It then proceeds to the baseline model—perfect information—and adverse selection with social identification. Social interaction follows in section 3. Section 4 gives conclusions and recommendations.

2. A model of stereotypic wage

2.1. Assumptions

1. *Categorization*. Consider a simplified version of a categorization process in which the salient social dimension defining group membership is firm membership. A laborer who identifies himself with a particular firm is an insider, N, who has value significance of being with a particular firm. A laborer who does not identify with a firm is an outsider, O, who thinks that he is not part of a firm. N and O are defined broadly such that they relate to the value significance attached to firm membership and not to the actual physical presence or hours devoted at the workplace per se. In other words, N members are those who necessarily have value attachment to the organization and feel that they share common attributes with respect to the organization's culture, norms, identity, and image, while O members are the exact opposite. Following Akerlof and Kranton [2004], two general categories denoted by $C = \{N, O\}$ are assumed to exist. What Akerlof and Kranton failed to address is the accentuated perceptions by N on O and vice versa.

   To capture accentuated perceptions by N and O, further disaggregation of categories in terms of worker-ability types is made: a high-ability type worker, h, and a low-ability type, l. Four categories defined by set C_1, where $C_1 = \{N_h, N_l, O_h, O_l\}$, are assumed. The attributes of each social category are respectively defined by the four compartments in set C_1. Social category N_h corresponds to a group whose members share the attributes of being firm insider and high-ability type; N_l refers to firm insider and low-ability type, and so on. Borrowing the assumption of Fryer and Jackson [2003] on making the number of categories less than the number of objects (e.g., workers) to be sorted allows for coarse or lumpy categorization.[1]

[1] Lumpy categorization exploits the efficiency of storage and retrieval of information. This assumption has found support in social psychology through cognitive parsimony such that the constellations of information are stored among taxonomies in the human mind in a manageable fashion. In economic terms, this is explained by a "rational" indiv2idual's minimization of costs in storing, sorting, retrieving, and processing relevant information in decision-making process. As a result, an individual opts for "shortcuts" in which the stored objects, events, experiences, individuals or members of each social category are described by the common attributes or labels of that particular category. This is reminiscent of the concept of bounded rationality. Individuals often experience limitations on computational ability, cognitive organization, and utilization of information relevant to making choices and decisions. Hence, using the common attributes and labels of a category is a "satisficing criterion" (see Simon [1955, 1956, 1957, 1978]) in decision making. The limitations of knowledge and cognitive capacity have some repercussions, in return, on how individuals form taxonomies. As Simon [1956] succinctly puts it, "[bounded rationality] should be understood in the environment it evolved". Since an individual worker's group affiliation is also an environment to which his or her world revolves around, it necessarily implies that such affiliation influences the worker's perceptions and calculations about, and eventually actions toward experiences, objects, and other individuals. In social psychology, this culminates to group biases in favor of his or her own in-group members and against out-group members and operates through accentuated perceptions or "accentuation effect" (Billig and Tajfel [1973]; Festinger [1954]; Fiske and Taylor [1991]; Hogg and Abrams [1988]; Hogg and Turner [1987a; 1987b]; Levine and Campbell [1972]; Perreault and Bourhis [1999]; Tajfel [1978]; Tajfel et al. [1971]; and Taylor et al. [1978]).

One possibility of lumpy categorization is $C_2 = \{\{N_h, N_l\}, O_h, O_l\}$. Three social categories exist in set C_2: insiders are grouped under one category regardless of ability types while outsiders are distinctly partitioned by ability types into group O_h and group O_l. It is also plausible to have $C_3 = \{\{N_h, O_h\}, N_l, O_l\}$, which refers to three categories: high-ability types of workers are compartmentalized in one category regardless of firm membership, while low-ability types are finely sorted with respect to being outsiders or being insiders. The other four sets of possibilities are $C_4 = \{N_h, N_l, \{O_h, O_l\}\}$, where outsiders are grouped into one category; $C_5 = \{N_h, O_h, \{N_l, O_l\}\}$, where low-ability types are coarsely sorted; $C_6 = \{\{N_h, N_l\}, \{O_h, O_l\}\}$, where individuals are sorted by firm membership; and $C_7 = \{\{N_h, O_h\}, \{N_l, O_l\}\}$, where individuals are sorted by ability types.[2]

What these suggest is that if firm membership is the most relevant social dimension in categorization process, then C_2, C_4, or C_6 is relevant. On the other hand, if ability type is the most salient social dimension, C_3, C_5, or C_7 applies. In this paper, it is exogenously assumed that firm membership is the most salient social dimension to allow influence of one's being an insider or an outsider on the firm's decision to offer a contract in the adverse selection problem.

Proceeding to Fryer and Jackson's findings, the "optimal categorization" is achieved when the overall variation of objects from the prototype (a representative object possessing the embodiments of the attributes of a particular category) is minimized across categories. This implies that objects with less frequency (i.e., smaller number) that are in fact heterogeneous are coarsely categorized. Applying "optimal categorization" to the firm-laborer relationship, insiders are lumped altogether (the case of C_2) because the size of insiders is necessarily smaller relative to the size of the labor market minus the insiders of that firm. That is, accentuated perception is only one-sided. But, this ignores the fact that perception is always relative to the eye of the beholder. If firm membership is the most salient social dimension being considered, insiders (either *h*- or *l*-type) perceive outsiders as, in fact, a lumpy group regardless of the latter's ability types. Similarly, outsiders (either *h*- or *l*-type) view insiders as another lumpy group. The frequency of objects (e.g., size of either insiders or outsiders) has no place in accentuated perception. Meaning to say, "accentuation effect" is gauged on the *relative* perceptions of members of various groups, which Fryer and Jackson failed to incorporate in their analysis of "optimal categorization".

This paper simply assumes $C_6 = \{\{N_h, N_l\}, \{O_h, O_l\}\}$ *to hold* so that the prediction of social identification theory on accentuated similarities of characteristics of within-group members and differences of attributes between groups are captured. C_6 implies that members of either insider or outsider group perceive members of the opposite group in a lumpy fashion. Later in this section, accentuation is assumed

[2] Another type of lumpy categorization worthy of investigation is when workers above the organizational hierarchy are perfectly categorized while those below the hierarchy are coarsely sorted, according to the study of Fiske [1993].

to reflect in the variable t_N or t_O. It measures the importance of keeping up with the ideal behavior of either the insider or the outsider, respectively. The higher it is, the more an individual values conformity. Conformity captures member's tendency to be similar. Thus, t_N or t_O reflects similarities of characteristics of within-group members. Since an insider and an outsider have different ideal behaviors, t_N and t_O also reflect differences of characteristics of out-group members.

2. *Self-image*. An agent derives a utility, I_N, when he considers himself an insider. Identifying himself as an insider endows him a positive evaluation such as new or improved self-image. It rectifies the value significance he believes accrues him. It is assumed that the identity variable I_N is deterministic or exogenous.[3] The same reasoning applies to the outsiders: I_O. Let $I_N > I_O$ due to enhanced self-image or self-esteem derived by an insider after identifying himself with the firm.

3. *Effort levels*. A type-j agent of social category, c, exerts effort level e_i where i denotes either a high-effort level (H) or low-effort level (L):

$$e^{cj} = e_i, \forall \ i \in \{H, L\}, j \in \{h, l\} \text{ and } c \in \{N, O\}$$

To avoid confusion, the superscripts c and j denote firm membership (insider [N] or outsider [O]) and ability type (high [h] or low [l]), respectively. Ability types refer to the cost of effort exertion by the agent so that h-type corresponds to an agent with low disutility of effort, and an l-type corresponds to an agent with high disutility of effort. The subscript i denotes effort level. Thus, e^{cj} only signifies category membership and types, and e^{cj} takes on either of the two values of effort level: e_H or e_L.

Further, let $e_H > e_L \geq 0$ and e_H, $e_L \in [0, 2]$. Effort levels have lower and upper bounds of zero and two, respectively. Any effort level, demanded by the principal, greater than the upper bound yields negative profits to the firm. Any effort level less than two and greater than zero yields positive profits. These assumptions shall aid in ranking the contracts offered by the firm to the laborer due to a change in regime: t_N or t_O.

4. *Prescription*. Members of a social category follow certain codes of behavior. These codes of behavior allow them to distinguish themselves from members of other social categories. These codes (also known as stereotypic norms or common attributes) are formed, ascertained, learned, and internalized by the members of a group, and seen as a set of desirable criteria to influence their beliefs and courses of action. These are often called prescriptions or ideal/prescribed behaviors. Prescribing to these codes gives utility to the member of that social category through group acceptance, praise, or sense of group belongingness, while deviating from this prescription confers disutility to that individual through public rebuke, ridicule, taunt, and anxieties.

[3] One may argue that I_N is actually an endogenous variable since actions (e.g. effort levels exerted) of both insiders and outsiders and prescribed/ideal effort do influence I_N. Refer to the article of Akerlof and Kranton (2000) for details on this issue.

Again, following Akerlof and Kranton, let $e^{*}(c)$ be the prescribed behavior of insider and outsider agents such that $e^{*}(H)\ e_H$ and $e^{*}(O) = e_L$. Since agents derive disutility from deviating from the prescribed behavior of a category, denote such disutility of insider: $t_N \left| e^{*}(N) - e^{Nj} \right|$. This is also known in the literature as social distance [Akerlof 1997]. If an insider agent conforms to $e^{*}(N)$, he experiences no disutility (i.e., $e^{Nj} = e_H$). Further, the cost of deviation is magnified by a weighting factor t_N, the importance of conforming to the ideal effort by the insiders, where $t_N \in [0, \infty)$. t_N captures the salience of firm membership. The higher the t_N is, the more important firm membership becomes and the more pronounced similarities (through conformity) of an agent are relative to the prototype or ideal behavior of the group. Similarly, an outsider suffers a corresponding disutility deviating from his ideal effort: $t_O \left| e^{*}(O) \div e^{Oj} \right|, \forall t_O \in [0,\infty)$.

When social interaction within the firm is introduced in section 3, the ideal behavior of insiders or outsiders becomes $e^{*}(c) = \beta e_H + (1-\beta)e_L$, where $\beta \in [0,1]$. The frequency of social interaction by insiders is measured by the variable β. β is postulated to be the number of insiders working at the firm. $(1 - \beta)$ refers to the number of outsiders working at the firm. As $\beta \to 1, e^{*}(c) \to e_H$. If, $\beta \to 0, e^{*}(c) \to e_L$. This suggests that ideal behavior is a "social event" (see Fang and Loury [2004]). The social interaction variable, β, is assumed to be parametrically given.

5. *Contractual relationship*. Firm (principal) is risk-neutral, and worker (agent) is risk-averse under adverse selection. The source of information asymmetry is the cost of effort exertion; firm-membership is known to both.

Suppose that there are two types of agents, high-ability "*h*" type (low-cost type) and low-ability "*l*" type (high-cost type), who can choose to deploy effort level, e_i, and who differ from each other only by their respective cost of exerting effort. An *l*-type finds it costly by a factor $k \in (1,\infty)$ on his disutility of effort than the *h*-type does. An *h*-type has cost (disutility) of effort $\frac{1}{2}e_i^2$, while an *l*-type has disutility of $\frac{k}{2}e_i^2$. Suppose that output is perfectly observed by the firm such that the amount of effort exerted by an agent generates an equal amount of output or revenues (price of output is normalized to one) for the firm. In this case, the principal perfectly observes effort levels. Suppose further that the principal does not know the cost of effort of an agent but is known to the agent. If a low-cost agent devotes, e_i (that is $e^{ch} = e_i$), the firm observes gross revenue of e_i and agent receives a wage of w_i^{ch} at a cost of $\frac{1}{2}e_i^2$. If a high-cost agent deploys effort, e_i (that is $e^{cl} = e_i$), the firm gets gross revenue of e_i and the agent receives wage w_i^{ch} at a cost of $\frac{k}{2}e_i^2$. Since the cost of effort to the agent is unknown to the firm, she, therefore, assigns a probability q if the agent is a low-cost (*h*-type) and $(1-q)$ if he is a high-cost (*l*-type). Each agent faces the same reservation utility of $\bar{U}$.

Agent's pay-off

Thus, an agent of either category has the separable utility function:

$U\left(w_i^{ch}, e^{ch}, c\right) = w_i^{ch} - \frac{1}{2}\left(e^{ch}\right)^2 + I_c - t_c\left|e^*(c) - e^{ch}\right|$ for *h*-type, and

$U\left(w_i^{cl}, e^{cl}, c\right) = w_i^{cl} - \frac{k}{2}\left(e^{cl}\right)^2 + I_c - t_c\left|e^*(c) - e^{cl}\right|$ for *l*-type.

Principal's pay-off

The firm has the following expected profits:

$$E[\pi] = q\left(e^{ch} - w_i^{ch}\right) + (1-q)\left(e^{cl} - w_i^{cl}\right)$$

The role of social categorization by firm membership under adverse selection emanates from the principal's desire to discriminate workers who conform to the ideal behavior. Firm membership gives the principal information on the attachment of the worker to the ideal behavior prescribed by the organization so that a strong attachment influences how a contract should be designed and offered to cater to the types. Conformity by the agent to the ideal behavior reduces the compensation that the firm has to give him (thus raises expected profits) since deviation from the ideal creates disutility to the agent. In other words, coincidence of the goal of the firm and insider's action raises firm's profits; thus the principal wants to employ an agent who conforms to the ideal behavior.

2.2 Full information and social identification (benchmark)

Consider the full-information case:

Insiders (N) and Outsiders (O): $e^*(N) = e_H$ and $e^*(O) = e_L$

$$\max_{\{w_i^{ch}\}_{i=H,L}} \quad \pi = e^{ch} - w_i^{ch} \qquad \text{(P0.0a)}$$

$$\text{s.t.} \quad w_i^{ch} - \frac{1}{2}\left(e^{ch}\right)^2 + I_c - t_c\left|e^*(c) - e^{ch}\right| \geq \bar{U} \qquad \left(\mathrm{PC_i^{ch}}\right)$$

and

$$\max_{\{w_i^{cl}\}_{i=H,L}} \quad \pi = e^{cl} - w_i^{cl} \qquad \text{(P0.0b)}$$

$$\text{s.t.} \quad w_i^{cl} - \frac{k}{2}\left(e^{cl}\right)^2 + I_c - t_c\left|e^*(c) - e^{cl}\right| \geq \bar{U} \qquad \left(\mathrm{PC_i^{cl}}\right)$$

which yield the solutions for insiders: (for $e^{Nh} = e_H$, $e^{Nl} = e_L$ and $e_H > e_L \geq 0$)

$$w_H^{Nh\ first-best} = \bar{U} + \tfrac{1}{2}e_H^2 - I_N$$
$$w_L^{Nl\ first-best} = \bar{U} + \tfrac{k}{2}e_L^2 - I_N + t_N(e_H - e_L) \tag{0.1}$$

if the principal demands a high-effort level, e_H, from the h-type insider and a low-effort level, e_L, from the l-type insider. On the other hand, if the principal demands high-effort level, e_H, from both h-type and l-type insiders (i.e., $e^{NH} = e^{Nl} = e^H > 0$) so that the l-type's action coincides with the firm's ideal effort level, $e^*(N) = e_H$, said l-type insider receives the wage $w_L^{Nl\ first-best} = \bar{U} + \frac{k}{2}e_L^2 - I_N$. The principal prefers to offer l-type the contract $\left(w_H^{Nl\ first-best}, e_H\right)$ than contract $\left(w_L^{Nl\ first-best}, e_L\right)$ if $t_N > \frac{k}{2}(e_H + e_L) - 1$. In other words, if the importance of keeping up with the ideal is large, $t_N \to \infty$, and/or as cost of effort exertion by l-type is very small, $k \to 1$, then his disutility from deviation from the ideal effort becomes large. l-type's choosing high-effort level is better than low-effort.

Alternatively, the principal may demand e_L from h- and l-type agents (i.e., $e^{Nh} = e^{Nl} = e_L \geq 0$) so that h-type receives $w_L^{Nh\ first-best} = \bar{U} + \frac{1}{2}e_L^2 - I_N + t_N(e_H - e_L)$. Contract $\left(w_L^{Nh\ first-best}, e_L\right)$ is preferred by the firm than contract $\left(w_H^{Nh\ first-best}, e_H\right)$ if the condition $t_N < \frac{1}{2}(e_H + e_H)$ is satisfied. In other words, if t_N becomes large, both h-type and l-type rather exert e_H. Overall, each accepts his respective contract, $\left\{\left(w_H^{Nh\ first-best}, e_H\right), \left(w_H^{Nl\ first-best}, e_H\right)\right\}$; otherwise the cost experienced by the h-type or l-type is large when he does not conform to the ideal effort.

Equivalently, we have the following solutions for the h-type outsider exerting effort level e_H, and the l-type outsider devoting e_L, respectively: (for $e^{Oh} = e_H$, $e^{Ol} = e_L$ and $e_H > e_L \geq 0$)

$$w_H^{Oh\ first-best} = \bar{U} + \tfrac{1}{2}e_H^2 - I_O + t_O(e_H - e_L)$$
$$w_L^{Ol\ first-best} = \bar{U} + \tfrac{k}{2}e_L^2 - I_O \tag{0.2}$$

Consider what happens when a high-effort level is demanded of both types. If the firm desires to employ an agent to deploy e_H but he has an ideal effort of $e^*(O) = e_L$, she may ask the l-type outsider to exert e_H instead of e_L (i.e., $e^{Oh} = e^{Ol} = e_H > 0$). In this case, his new wage offer is $w_H^{Ol\ first-best} = \bar{U} + \frac{k}{2}e_H^2 - I_O + t_O(e_H - e_L)$. Contract $\left(w_H^{Ol\ first-best}, e_H\right)$ offered to l-type outsider is preferred by the firm than contract $\left(w_L^{Ol\ first-best}, e_L\right)$ if $t_O < 1 - \frac{k}{2}(e_H + e_L)$. A small t_O gives less disutility to the l-type if he deviates from his ideal effort by choosing e_H instead, and a small k reduces his disutility of effort exertion.

Alternatively, the firm may ask the h-type outsider to exert low-effort level, e_L, than high-effort, e_H (i.e., $e^{Oh} = e^{Ol} = e_L > 0$). The firm finds it profitable to give him the contract $\left(w_L^{Oh\ first-best}, e_L\right)$, where $w_L^{Oh\ first-best} = \bar{U} + \frac{1}{2}e_L^2 - I_O$, than contract $\left(w_H^{Oh\ first-best}, e_H\right)$ if $t_O > 1 - \frac{1}{2}(e_H + e_L)$. Meaning, as t_O increases, the disutility of nonconformity becomes a relevant consideration to the outsider agent. To cut his loses, h-type prefers to exert low-effort level. An *l*-type outsider, on the other hand, has zero disutility of nonconformity since he exerts e_L. Hence, each accepts his respective contract $\{(w_L^{Oh\,first\text{-}best}, e_L), (w_L^{Ol\,first\text{-}best}, e_L)\}$ for $t_O \to \infty$.

2.3. Adverse selection and social identification

Insiders (N): $(e^*(N) = e_H)$

$$\max_{\{w_i^{Nh}, w_i^{Nl}\}_{i=H,L}} \quad E[\pi] = q\left(e^{Nh} - w_i^{Nh}\right) + (1-q)\left(e^{Nl} - w_i^{Nl}\right) \tag{P1.0}$$

$$\text{s.t.} \quad w_i^{Nh} - \tfrac{1}{2}\left(e^{Nh}\right)^2 + I_N - t_N\left|e^*(N) - e^{Nh}\right| \geq \bar{U} \tag{PC_i^{Nh}}$$

$$w_i^{Nl} - \tfrac{k}{2}\left(e^{Nl}\right)^2 + I_N - t_N\left|e^*(N) - e^{Nl}\right| \geq \bar{U} \tag{PC_i^{Nl}}$$

$$w_i^{Nh} - \tfrac{1}{2}\left(e^{Nh}\right)^2 + I_N - t_N\left|e^*(N) - e^{Nh}\right| \geq w_i^{Nl} - \tfrac{1}{2}\left(e^{Nl}\right)^2 + I_N - t_N\left|e^*(N) - e^{Nl}\right. \tag{IC_i^{Nh}}$$

$$w_i^{Nl} - \tfrac{k}{2}\left(e^{Nl}\right)^2 + I_N - t_N\left|e^*(N) - e^{Nl}\right| \geq w_i^{Nh} - \tfrac{k}{2}\left(e^{Nh}\right)^2 + I_N - t_N\left|e^*(N) - e^{Nh}\right. \tag{IC_i^{Nl}}$$

Three equilibrium contracts (a separating and pooling) solve the principal's problem.

The following *separating* contract giving zero gains to *l*-type and positive gains to *h*-type insider is derived: (for $e^{Nh} = e^H$, $e^{Nl} = e^L$ and $e^H > e^L \geq 0$)

$$\begin{aligned} w_H^{Nh^*} &= \bar{U} + \tfrac{1}{2}e_H^2 - I_N + \tfrac{(k-1)}{2}e_L^2 \\ w_L^{Nl^*} &= \bar{U} + \tfrac{k}{2}e_L^2 - I_N + t_N\left(e_H - e_L\right) \end{aligned} \tag{1.1}$$

As expected, the wage offer to either type is lower by the amount of utility he derives from being an insider, I_N. While *l*-type has to be compensated for deviating from ideal effort level, $t_N(e_H - e_L)$, *h*-type has to be compensated not from coincidence of effort level to the prescribed effort (in fact, there is no deviation from ideal effort) but from the usual informational rent he enjoys. Wage difference between *h*- and *l*-type insiders under the separating contract equals to $\frac{1}{2}\left(e_H^2 - e_L^2\right) - t_N\left(e_H - e_L\right)$. Note that $w_H^{Nh^*} > w_L^{Nl^*}$ holds if the necessary condition $\frac{1}{2}\left(e_H + e_L\right) > t_N$ is satisfied.

Consider the candidate pooling equilibrium (A) with the following properties: *h*-type and *l*-type insider exert same low-level of effort (i.e., $e^{Nh} = e^{Nl} = e_L \geq 0$) and receive same level of wage:

$$\hat{w}_L^N = \hat{w}_L^{Nh} = w_L^{Nl^*} = \bar{U} + \tfrac{k}{2}e_L^2 - I_N + t_N\left(e_H - e_L\right). \tag{1.2}$$

When both agents sign their respective contracts $\left\{\left(\hat{w}_L^N, e_L\right), \left(\hat{w}_L^N, e_L\right)\right\}$, the l-type worker is indifferent to accepting this contract to his reservation utility (i.e., no gains to l-type player) while h-type agent has positive gains.

The principal may also offer the following pooling contract (B), $\left\{\left(\hat{w}_H^N, e_H\right), \left(\hat{w}_H^N, e_H\right)\right\}$, where

$$\hat{w}_H^N = \hat{w}_H^{Nh} = \hat{w}_H^{Nl} = \bar{\text{U}} + \tfrac{k}{2} e_H^2 - I_N \tag{1.3}$$

for $e^{Nh} = e^{Nl} = e_H > 0$. Under this contract, l-type has zero gain while h-type has positive gains.

Comparing the expected profits of the principal under the contracts yields:

$$E\left[\pi\left\{\left(w_H^{Nh^*}, e_H\right), \left(w_L^{Nl^*}, e_L\right)\right\}\right] = q\left(e_H - w_H^{Nh^*}\right) + (1-q)\left(e_L - w_L^{Nl^*}\right) \quad \text{under separating contract} \tag{1.4}$$

$$E\left[\pi\left\{\left(\hat{w}_L^N, e_L\right), \left(\hat{w}_L^N, e_L\right)\right\}\right] = e_L - \hat{w}_L^N$$

$$E\left[\pi\left\{\left(\hat{w}_H^N, e_H\right), \left(\hat{w}_H^N, e_H\right)\right\}\right] = e_H - \hat{w}_H^N \qquad \text{under pooling contracts (A) and (B)}$$

The separating contract is preferred by the principal if it generates higher expected profits relative to the expected profits under the pooling contract (A), i.e., $E\left[\pi\left\{\left(w_H^{Nh^*}, e_H\right), \left(w_L^{Nl^*}, e_L\right)\right\}\right] > E\left[\pi\left\{\left(\hat{w}_L^N, e_L\right), \left(\hat{w}_L^N, e_L\right)\right\}\right]$ if this condition holds:

$$t_N > \tfrac{1}{2}\left(e_H + e_L\right) - 1, \qquad \forall q \in (0, 1/] \tag{1.5}$$

The separating contract is also preferred by the principal relative to the pooling contract (B) if $E\left[\pi\left\{\left(w_H^{Nh^*}, e_H\right), \left(w_L^{Nl^*}, e_L\right)\right\}\right] > E\left[\pi\left\{\left(\hat{w}_H^N, e_H\right), \left(\hat{w}_H^N, e_H\right)\right\}\right]$ if:

$$t_N < \left(\tfrac{k-g}{1-q}\right)\tfrac{1}{2}\left(e_H + e_L\right) - 1, \qquad \forall q \in [0, 1) \tag{1.6}$$

Examining equations (1.5) and (1.6), the following claims are derived. As the importance of conformity rises, $t_N \to \infty$, the separating contract $\left\{\left(w_H^{Nh^*}, e_H\right), \left(w_L^{Nl^*}, e_L\right)\right\}$ is chosen over the pooling contract (A), $\left\{\left(\hat{w}_L^N, e_L\right), \left(\hat{w}_L^N, e_L\right)\right\}$. The pooling contract (B), $\left\{\left(\hat{w}_H^N, e_H\right), \left(\hat{w}_H^N, e_H\right)\right\}$ is also chosen to the separating, if $t_N \to \infty$. Further, as the cost of effort exertion by l-type rises (k becomes large), then the principal prefers to offer the separating contract $\left\{\left(w_H^{Nh^*}, e_H\right), \left(w_L^{Nl^*}, e_L\right)\right\}$.

Intuitively, under equation (1.5), if conformity to the prescribed effort level of the group, e_H, is important to an insider, so that t_N becomes large, it is better for the firm to discriminate each type of insider by offering him a menu of contracts to each according to his attitude toward cost of effort (or his ability type). Why? The pooling equilibrium (A) gives greater disutility to *both* types of workers because they necessarily deviate from ideal effort. By offering a separating contract, only the *l*-type suffers from greater disutility due to nonconformity. An *l*-type will not sign a contract offered for the *h*-type since the former knows that doing so extols a cost on his part since he cannot keep up with the ideal effort. An *h*-type, on the other hand, signs his contract since he can keep up with the prescribed effort. Second, under equation (1.6), if $t_N \to \infty$, the pooling equilibrium (B) is preferred so that a large t_N does not exact the agent disutility of deviation. In fact, the pooling equilibrium (B) generates zero social distance to both *h*-type and *l*-type insiders since they exert the same high-effort level and receive the same wage.

Ranking of contracts can be performed. As $t_N \to \infty$ so that disutility of nonconformity becomes a relevant consideration to the agents, pooling equilibrium (B) is preferred to the separating contract; the latter contract is in turn preferred to the pooling equilibrium (A). This result is not really surprising. Once an agent socially identifies himself as an insider, with high level of effort as the prescribed behavior, a pooling contract in which either type receives the same wage $\hat{w}_H^N$ and deploys the same high effort, e_H, is best offered when firm membership becomes more relevant. The salience of being a member of an insider group is captured here by t_N. On the other hand, as $t_N \to 0$ or as firm membership becomes inconsequential so that an agent does not care about the cost of deviation, either a separating contract or a pooling contract is offered by the principal. The latter result should not really surprise us since as $t_N \to 0$, we are led to the standard adverse selection problem where the only effect of social identity is that it reduces payoff by I_N and where the choice of contract offered by the firm depends critically on the parameters q and k only.

The interpretations of k and q should not be taken as they are; rather they should be interpreted in relation to the value of t_N. The more costly (or the higher the disutility of effort) for the *l*-type to employ an effort level (i.e., $k \to \infty$), and/or the more *h*-type becomes likely (i.e., $q \to 1$), the pooling wage under pooling contract (B) is not a better strategy for the firm. Otherwise, the less costly for the *l*-type to employ an effort level (i.e., $k \to 1$), and the more *l*-type becomes more likely (i.e., $q \to 0$), the principal will not offer the separating wage to insider workers.

The findings above are summarized thus:

Proposition 1. Given q, k, t_N, I_N, $e^*(N) = e_H$ and for $e_H \geq e_L \geq 0$ and for and by Pareto ranking criterion, the principal offers either a pooling contract or separating contract under adverse selection when an agent identifies himself as an insider, N. For any given t_N,

(a) the pooling contract, $\left\{\left(\hat{w}_L^N, e_L\right), \left(\hat{w}_L^N, e_L\right)\right\}$, is preferred if

$$t_N < \tfrac{1}{2}(e_H + e_L) - 1;$$

(b) the separating contract, $\left\{\left(w_H^{Nh^*}, e_H\right), \left(w_L^{Nl^*}, e_L\right)\right\}$, is preferred if

$$t_N \in \left[\tfrac{1}{2}(e_H + e_L) - 1, \left(\tfrac{k-q}{1-q}\right)\tfrac{1}{2}(e_H + e_L) - 1\right]; \text{ or}$$

(c) the pooling contract, $\left\{\left(\hat{w}_H^N, e_H\right), \left(\hat{w}_H^N, e_H\right)\right\}$, is preferred if

$t_N > \left(\frac{k-q}{1-q}\right)\frac{1}{2}\left(e_H + e_L\right) - 1$.

Further, for $t_N \to \infty$, a pooling contract, $\left\{\left(\hat{w}_H^N, e_H\right), \left(\hat{w}_H^N, e_H\right)\right\}$, generates the largest expected profits to the firm.

Corollary 1. The pooling contract, $\left\{\left(\hat{w}_H^N, e_H\right), \left(\hat{w}_H^N, e_H\right)\right\}$, is never chosen if $k \to \infty$ and/or $q \to 1$. The separating contract, $\left\{\left(w_H^{Nh^*}, e_H\right), \left(w_L^{Nl^*}, e_L\right)\right\}$, is never chosen if $k \to 1$ and $q \to 0$.

Outsiders: $(e^*(O) = e_L)$

$$\max_{\left\{w_i^{Oh}, w_i^{Ol}\right\}_{i=H,L}} \mathrm{E}[\pi] = q\left(e^{Oh} - w_i^{Oh}\right) + (1-q)\left(e^{Ol} - w_i^{Ol}\right) \tag{P2.0}$$

$$\text{s.t. } w_i^{Oh} - \tfrac{1}{2}\left(e^{Oh}\right)^2 + I_O - t_O\left|e^*(O) - e^{Oh}\right| \geq \bar{\mathrm{U}} \qquad \left(\mathrm{PC}_{\mathrm{i}}^{\mathrm{Oh}}\right)$$

$$w_i^{Ol} - \tfrac{k}{2}\left(e^{Ol}\right)^2 + I_O - t_O\left|e^*(O) - e^{Ol}\right| \geq \bar{\mathrm{U}} \qquad \left(\mathrm{PC}_{\mathrm{i}}^{\mathrm{Ol}}\right)$$

$$w_i^{Oh} - \tfrac{1}{2}\left(e^{Oh}\right)^2 + I_O - t_O\left|e^*(O) - e^{Oh}\right| \geq w_i^{Ol} - \tfrac{1}{2}\left(e^{Ol}\right)^2 + I_O - t_O\left|e^*(O) - e^{Ol}\right. \qquad \left(\mathrm{IC}_{\mathrm{i}}^{\mathrm{Oh}}\right)$$

$$w_i^{Ol} - \tfrac{k}{2}\left(e^{Ol}\right)^2 + I_O - t_O\left|e^*(O) - e^{Ol}\right| \geq w_i^{Oh} - \tfrac{k}{2}\left(e^{Oh}\right)^2 + I_O - t_O\left|e^*(O) - e^{Oh}\right. \qquad \left(\mathrm{IC}_{\mathrm{i}}^{\mathrm{Ol}}\right)$$

The analysis entailed in problem (P2.0) is similar to the one in (P1.0). The following solutions are derived:

Separating equilibrium (given $e^{Oh} = e_H$, $e^{Ol} = e_L$ and $e_H > e_L \geq 0$):

$$\begin{aligned} w_H^{Oh^*} &= \bar{\mathrm{U}} + \tfrac{1}{2}e_H^2 - I_O + t_O\left(e_H - e_L\right) + \tfrac{(k-1)}{2}e_L^2 \\ w_L^{Ol^*} &= \bar{\mathrm{U}} + \tfrac{k}{2}e_L^2 - I_O \end{aligned} \tag{2.1}$$

Further examination of the separating contract for outsiders reveals *h*-type outsider receives more compensation than the *l*-type outsider-worker, relative to the separating contract for insiders. This additional compensation arises from the *h*-type's deviation from ideal effort, given t_O, and from the informational rent. Wage difference of the *h*-type and *l*-type amounts to $\frac{1}{2}\left(e_H^2 - e_L^2\right) + t_O\left(e_H - e_L\right)$. $w_H^{Oh^*} > w_L^{Ol^*}$ holds if this difference is greater than zero or, equivalently, $\frac{1}{2}\left(e_H + e_L\right) > -t_O$.

The principal may offer the pooling contract (C) where *h*- and *l*-type outsiders exert the same effort level $e^{Oh} = e^{Ol} = e_L \geq 0$ and receive the same wage level:

$$\hat{w}_L^O = \hat{w}_L^{Oh} = w_L^{Ol^*} = \bar{U} + \tfrac{k}{2} e_L^2 - I_O. \tag{2.2}$$

Under the pooling contract, $\{(\hat{w}_L^O, e_L), (\hat{w}_L^O, e_L)\}$, *l*-type has zero gain while *h*-type positively gains.

It is also plausible that the principal offers the pooling contract (D), $\{(\hat{w}_H^O, e_H), (\hat{w}_H^O, e_H)\}$, in which both *h*-type and *l*-type outsider exert the same level of effort $e^{Oh} = e^{Ol} = e^H > 0$ and receive the same wage:

$$\hat{w}_H^O = \hat{w}_H^{Oh} = \hat{w}_H^{Ol} = \bar{U} + \tfrac{k}{2} e_H^2 - I_O + t_O(e_H - e_L) \tag{2.3}$$

for which *l*-type has zero gains and *h*-type has positive gains.

The principal chooses the separating contract over the pooling contract (C) if $E\left[\pi\left\{(w_H^{Oh^*}, e_H), (w_L^{Ol^*}, e_L)\right\}\right] > E\left[\pi\left\{(\hat{w}_L^O, e_L), (\hat{w}_L^O, e_L)\right\}\right]$. This expression reduces to:

$$t_O < 1 - \tfrac{1}{2}(e_H + e_L), \qquad \forall q \in (0,1] \tag{2.4}$$

Think of t_O as the mirror image of parameter t_N. When an outsider tends to put less importance to living up to the ideal effort, $e^*(O) = e_L$, so that t_O becomes small ($t_O \to 0$), the principal finds it profitable to offer him the separating contract. The cost experienced by any outsider due to nonconformity, $t_O \left| e^*(O) - e^{Oj} \right|$, $\forall j \in \{h, l\}$, is small. So that, if the *h*-type deploys a high level of effort, e_H, his deviation from the ideal effort of e_L, does not exact him large disutility. In fact, as $t_O \to 0$, the disutility of *h*-type approaches zero. Thus the separating contract $\{(w_H^{Oh^*}, e_H), (w_L^{Ol^*}, e_L)\}$ is chosen under this scenario.

In other words, as t_O becomes large, the disutility of the *h*-type outsider arising from deviation is amplified so that he will have to be compensated more (thus lower expected profits of the principal). The principal does better if she offers him the pooling contract (C), $\{(\hat{w}_L^O, e_L), (\hat{w}_L^O, e_L)\}$, under which both *h*-type and *l*-type deploy the same low-effort level, e_L. This low-effort level by *h*-type coincides with the ideal effort for outsiders. The *l*-type outsider, on the other hand, does not suffer from any additional disutility since he always conforms to the ideal under this contract.

Equivalently, separating contract is preferred to pooling contract (D) if $E\left[\pi\left\{(w_H^{Oh^*}, e_H), (w_L^{Ol^*}, e_L)\right\}\right] > E\left[\pi\left\{(\hat{w}_H^O, e_H), (\hat{w}_H^O, e_H)\right\}\right]$, i.e.,

$$t_O > 1 - \left(\tfrac{k-q}{1-q}\right)\tfrac{1}{2}(e_H + e_L), \qquad \forall q \in [0,1) \tag{2.5}$$

If the importance of conforming to the ideal effort of outsiders, $e^*(O) = e_L$, is large ($t_O \to \infty$), the cost of deviating by *both* types is rather large. Both *h*- and *l*-type outsiders exert the same high-effort level under the pooling contract (D), $\{(\hat{w}_H^O, e_H), (\hat{w}_H^O, e_H)\}$. This disutility is even magnified when outsider agents put big weight on the importance of conformity. This calls for the principal to offer separating contract, $\{(w_H^{Oh^*}, e_H), (w_L^{Ol^*}, e_L)\}$, under which, only the h-type (exerting e_H) suffers from the disutility of nonconformity, while the l-type (exerting e_L) does not since the latter adheres to the prescribed effort level, e_L. On the other hand, if $t_O \to 0$ such that adhering to the ideal is unimportant, then accepting the pooling contract (D) gives approximately zero social distance. Thus the pooling equilibrium (D) is a profitable contract.

Overall, for $t_O \to \infty$, the pooling equilibrium (C) is chosen and offered by the firm over the separating contract. The latter contract is in turn preferred to the pooling contract (D). Thus, a low-wage low-effort pooling contract generates the highest expected profits to the principal. On the other hand, either a separating contract or a pooling contract is offered to the outsiders as conformity to the ideal becomes trivial (i.e., $t_O \to 0$). In the latter, the type of contract designed and offered by the firm depends on the parameters q and k.

The above analyses are, thus, summarized in proposition 2 and its corollary.

Proposition 2. Given q, t_O, I_O, $e^*(O) = e_L$ and for $e_H \geq e_L \geq 0$ and by Pareto ranking criterion, the principal either offers a pooling contract or a separating contract under adverse selection when an agent identifies himself as an outsider, O. For any given t_O,

(a) the pooling contract, $\{(\hat{w}_L^O, e_L), (\hat{w}_L^O, e_L)\}$, is preferred if

$t_O > 1 - \frac{1}{2}(e_H + e_L)$;

(b) the separating contract, $\{(w_H^{Oh^*}, e_H), (w_L^{Ol^*}, e_L)\}$, is preferred if

$t_O \in \left[1 - \left(\frac{k-q}{1-q}\right)\frac{1}{2}(e_H + e_L), 1 - \frac{1}{2}(e_H + e_L)\right]$; or

(c) the pooling contract, $\{(\hat{w}_H^O, e_H), (\hat{w}_H^O, e_H)\}$, is preferred if

$t_O < 1 - \left(\frac{k-q}{1-q}\right)\frac{1}{2}(e_H + e_L)$.

Further, for $t_O \to \infty$, a pooling contract, $\{(\hat{w}_L^O, e_L), (\hat{w}_L^O, e_L)\}$, yields the highest expected profits to the firm.

Corollary 2. The pooling contract, $\{(\hat{w}_H^O, e_H), (\hat{w}_H^O, e_H)\}$, is never chosen if $k \to \infty$ and/or $q \to 1$. The separating contract, $\{(w_H^{Oh^*}, e_H), (w_L^{Ol^*}, e_L)\}$, is never chosen if $k \to 1$ and $q \to 0$.

3. Social interaction and ideal behavior

One of the comments this paper seeks to single out in the Akerlof and Kranton model on social identification and economics of organization is the assumption that the ideal effort is independently imposed within the organization or, perhaps, is a product of mutual consent of some or all players. This is without regard to the process of *social influence* in social psychology.

In case the ideal behavior is determined by one or few players, it must be that all vestiges of authority and of power reside in them as they lay out the short- and/or long-term goals of the firm.

Ideal behavior being independently imposed is highly implausible. Individuals in the process of social interaction may somehow influence the prescribed code of conduct over time. In any group, the crucial feature of prescriptions is that they are not necessarily just an output of idiosyncratic coincidence imposed from above; they are built up and shared in the process of social influence. In fact, Akerlof and Kranton [2000] warned that actions of identified individuals may also affect prescriptions, the set of social categories, and the status of different categories. This happens, for instance, when a firm starts a series of advertising crusades to build up or enhance its image and/or to affect consumers' tastes. While the crusades are a result of social interaction among workers, these advertising campaigns will inevitably influence how its employees should behave in response to this altered image or identity. Simply put, ideal behavior, e.g., ideal effort $e^*(N)$ or $e^*(O)$, is a *social event*. Fang and Loury [2004], in fact, argued that identity choice (thus prescriptions or ideal behavior) is a social phenomenon. This is not really a new concept in social psychology (see "referent informational influence" theory by Turner [1981] (see also Hogg and Turner [1987a; 1987b]). Prescriptions, being a social event, are set within a social category in which, after individuals have defined and identified themselves as members of a particular social category, they form, ascertain, learn and internalize the stereotypic norms and attributes of that category, different from those defined by other categories or groups. They take these norms and attributes—a set of desirable criteria—to influence their beliefs and courses of action.

Hence, assume that ideal behavior is a product of how frequent or involved players are in the social interaction process with other members of the same or different social identity. The frequency of social interaction by insiders is measured by the variable β. β is postulated to be the number of insiders working at the firm. This variable is normalized to take the values between 0 and 1, $\beta \in [0, 1]$, so that $1 - \beta$ corresponds to the frequency of outsiders within the firm. The ideal effort of insiders (N) or outsiders (O) is, therefore, $e^*(c) = \beta e_H + (1-\beta) e_L$.

Consider the case of insiders, $e^*(N) = \beta e_H + (1-\beta) e_L$. This means that the more insiders there are in the organization, i.e., as composition of the organization becomes more homogenously distributed toward insiders or as like-minded insider workers interact more with members of same social category, $\beta \rightarrow 1$, the ideal effort of insiders approaches the high level of effort, $e^*(N) \rightarrow e_H$. Similarly for outsiders, $e^*(O) = \beta e_H + (1-\beta) e_L$, the greater the number of outsiders working at the firm, as $\beta \rightarrow 0$, the ideal effort of outsiders approaches

e_L, $e^*(O) \rightarrow e_L$. Note, however, that it is possible to conjure $e^*(N) \rightarrow e_L$ as $\beta \rightarrow 0$, or $e^*(O) \rightarrow e_H$ as $\beta \rightarrow 1$.

A better way to understand social interaction in real life is to incorporate adjustment costs. These costs could be captured with some taste parameters accounting for aversion or "degree of intolerance" experienced by an insider or an outsider when he associates himself with the opposite group. These adjustment costs arise due to one's violation of existing norms, and this violation greatly affects his enthusiasm to participate in the social interaction or his motivation to contribute to the productive activities within the firm. Fortunately, Alesina and la Ferrara [2000], with further extension by Chatterjee and Sarangi [2004], have provided a framework in which social interaction variables β and $(1 - \beta)$ *implicitly* account for these adjustment costs so that β and $(1 - \beta)$ are endogenously derived.[4]

The following contracts under social identification and social interaction are thus derived.

Insiders and Outsiders: $(e^*(c) = \beta e_H + (1 - \beta) e_L, \qquad \forall \beta \in [0, 1], c \in \{N, O\})$

Separating equilibrium, (for $e^{ch} = e_H$, $e^{cl} = e_L$, and $e_H > e_L > 0$):

$$\begin{aligned} w_H^{ch^*} &= \bar{\mathrm{U}} + \tfrac{1}{2}e_H^2 - I_c + \tfrac{(k-1)}{2}e_L^2 + t_c(1-\beta)(e_H - e_L) \\ w_L^{cl^{**}} &= \bar{\mathrm{U}} + \tfrac{k}{2}e_L^2 - I_c + t_c\beta(e_H - e_L) \end{aligned} \tag{3.1}$$

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[4] Accordingly, the social interaction between an insider and an outsider when they both work with the firm entails an adjustment costs arising from aversion of an individual of either category towards the opposite group. The underlying assumption is that a worker prefers to participate in an activity with members of the same firm membership for which case adjustment cost is zero. Hence, adjustment costs influence the decision to participate working with the firm. Moreover, these costs vary across social categories since the experience by an insider-agent with the firm. Moreover, these costs vary across social categories since the experience by an insider-agent in a primarily "outsider" environment is different from the experience by an outsider-agent in an "insider" environment. Borrowing from Chatterjee and Sarangi:

Suppose an individual decides whether or not to participate in the social interaction within the firm; a and b are the respective adjustment costs experienced by the outsider and the insider when they mix themselves with the opposite group. Suppose the respective utility of outsiders and insiders from social interaction in the firm is given by $U_o = U(a, \theta_N)$ and $U_N = U(b, \theta_o)$, where θ_N refers to the proportion of insider-agents in the firm and θ_o the proportion of outsider-agents. To capture one's preference to socially interact with members of his own social category, the following conditions should hold: $\frac{\partial U_o}{\partial a} < 0$, $\frac{\partial U_N}{\partial b} < 0$, $\frac{\partial U_o}{\partial \theta_N} < 0$ and $\frac{\partial U_N}{\partial \theta_o} < 0$. Given the reservation utility $\underline{U}$ from non-participation in the interaction, agents will participate in the social interaction within the firm if $U_o = U(a, \theta_N) \geq U$ and $U_N = U(b, \theta_o) \geq U$ hold. Thus, $a^* \leq U^{-1}(\underline{U}, \theta_N)$ and $b^* \leq U^{-1}(\underline{U}, \theta_o)$ which reflect *relative* adjustment costs of mixing with opposite social category in the firm as experienced by outsiders and insiders, respectively. Suppose there are n_o number of outsiders in the population, and n_N number of insiders in the population. The number of outsiders who are willing to participate and socially interact with other members of opposite social category within the firm is given by $\dot{n}_o = \text{Prob}\{a^* \leq U^{-1}(\underline{U}, \theta_N)\}n_o$. Correspondingly, the number of insiders who want to participate and socially interact with other members of opposite social category within the firm is $\dot{n}_N = \text{Prob}\{b^* \leq \underline{U}^{-1}(\underline{U}, \theta_o)\}n_N$. As shown by Alesina and la Ferrera, the *equilibrium* composition of insiders within the firm is provided by the proposition of participants in the social interaction $b = \frac{\dot{n}_N}{\dot{n}_o + \dot{n}_N}$. $1 - b = \frac{\dot{n}_o}{\dot{n}_o + \dot{n}_N}$ is the *equilibrium* composition of outsiders within the firm.

Wage of h-type agent (of either firm membership c) is greater than that of l-type under this contract, $w_H^{ch**} > w_L^{cl**}$, if the condition holds: $\frac{\frac{1}{2}(e_H+e_L)}{2\beta-1} > t_c$ for $\beta \neq \frac{1}{2}$. The last terms of w_H^{ch**} and w_L^{cl**} in equation (3.1) are the additional compensations for the l- and h-type agents of any outsider-firm membership arising from their deviation from the ideal behavior. The more outsider-agents there are socially interacting within the organization (so that $\beta \to 0$), the more likely that category-c agents prescribe to the ideal effort $e^*(c) \to e_L$. Under the separating contract (where $e^{ch} = e_H$, $e^{cl} = e_L$), an h-type agent who wants to be differentiated from the group of l-type must, therefore, be compensated more for his deviation. His additional compensation amounts to $t_c(1-\beta)(e_H - e_L)$.

On the other hand, if $\beta \to 1$, l-type is compensated more for not conforming to the ideal effort $e^*(c) \to e_H$, while h-type is not.

Consider the pooling contracts (A') and (B'), respectively,

for $e^{ch} = e^{cl} = e_L \geq 0$: $\left\{\left(\overset{-c}{w_L}, e_L\right), \left(\overset{-c}{w_L}, e_L\right)\right\}$ where

$$\overset{-c}{w_L} = \overset{-ch}{w_L} = w_L^{cl**} = \bar{\mathrm{U}} + \tfrac{k}{2} e_L^2 - I_c + t_c \beta (e_H - e_L) \tag{3.2}$$

for $e^{ch} = e^{cl} = e_H > 0$: $\left\{\left(\overset{-c}{w_H}, e_H\right), \left(\overset{-c}{w_H}, e_H\right)\right\}$ where

$$\overset{-c}{w_H} = \overset{-ch}{w_H} = \overset{-cl}{w_H} = \bar{\mathrm{U}} + \tfrac{k}{2} e_H^2 - I_c + t_c(1-\beta)(e_H - e_L) \tag{3.3}$$

The separating contract is preferred by the principal if the expected profits of the firm are greater than the expected profits generated by the pooling contract (A'), $E\left[\pi\left\{\left(w_H^{ch*}, e_H\right), \left(w_L^{cl*}, e_L\right)\right\}\right] > E\left[\pi\left\{\left(\overset{-c}{w_L}, e_L\right), \left(\overset{-c}{w_L}, e_L\right)\right\}\right]$, or

$$t_c(1-2\beta) < 1 - \tfrac{1}{2}(e_H + e_L), \qquad \forall q \in (0,1] \tag{3.4}$$

If $\beta \to 1$ so that $e^*(c) \to e_H$ and if, $t_c \to \infty$ both h- and l-types suffer from large disutility if they deviate from the ideal effort by accepting the pooling contract $\left\{\left(\overset{-c}{w_L}, e_L\right), \left(\overset{-c}{w_L}, e_L\right)\right\}$. Under the latter contract both always deviate (i.e., $e^{ch} = e^{cl} = e_L$). Thus, for large t_c and large β, a separating contract is preferred by the firm since only l-type deviates (i.e., $e^{ch} = e_H$ and $e^{cl} = e_L$). The opposite is true when t_c is large and β is small; so that $\beta \to 0$ corresponds to $e^*(c) \to e_L$. This implies that the pooling contract minimizes the disutility of nonconformity.

The separating contract is preferred to the pooling contract (B') if, $E\left[\pi\left\{\left(w_H^{ch**}, e_H\right), \left(w_L^{cl**}, e_L\right)\right\}\right] > E\left[\pi\left\{\left(\overset{-c}{w_H}, e_H\right), \left(\overset{-c}{w_H}, e_H\right)\right\}\right]$, or:

$$t_c(1-2\beta) > 1 - \left(\tfrac{k-q}{1-q}\right)\tfrac{1}{2}(e_H + e_L), \qquad \forall q \in (0,1] \tag{3.5}$$

If $\beta \to 1$ so that $e^*(c) \to e_H$ and if $t_c \to \infty$, both h- and l-type can offset the large disutility by not deviating from the ideal effort instead. This is true when the pooling contract $\left\{\left(\bar{w}^{c}_{H}, e_H\right), \left(\bar{w}^{c}_{H}, e_H\right)\right\}$ is accepted. The opposite is true when t_c is large and β is small so that $\beta \to 0$ implies $e^{*}(c) \to e_L$. In this case, the separating contract minimizes the disutility of nonconformity since only *h*-type deviates from ideal while *l*-type conforms.

Again, ranking the expected profits generated by the candidate contracts can be performed under various regimes. If $t_c \to \infty$ and $\frac{1}{2} < \beta \leq 1$, the pooling contract (B') yields higher expected profits, and is thus preferred by the firm to the separating contract. The latter contract is, in turn, preferred to pooling (A'). If $t_c \to \infty$ and $0 \leq \beta < \frac{1}{2}$, the ranking is reversed. Interestingly, even if $t_c \to \infty$ and so long as $\beta = \frac{1}{2}$, ranking cannot be performed because either a separating contract or a pooling contract is preferred, depending on the values of the parameters q and k. In the same fashion, the existence of multiple equilibria does extend to the regime when $t_c \to 0$ and for whatever values of β. These are summarized in proposition 3 and its corollary.

Proposition 3. Given q, t_c, I_c, $e^{*}(c) = \beta e_H + (1-\beta)e_L$ and for $e_H \geq e_L > 0$ and by Pareto ranking criterion, the principal offers either a pooling contract or separating contract under adverse selection when agents identify themselves in either firm membership, c. For any given t_c and β,

(a) the pooling contract, $\left\{\left(\bar{w}^{c}_{L}, e_L\right), \left(\bar{w}^{c}_{L}, e_L\right)\right\}$, is preferred if

$$t_c(1-2\beta) > 1 - \tfrac{1}{2}(e_H + e_L);$$

(b) the separating contract, $\left\{\left(w_H^{ch^{**}}, e_H\right), \left(w_L^{cl^{**}}, e_L\right)\right\}$, is preferred if

$$t_c(1-2\beta) \in \left\lfloor 1 - \left(\tfrac{k-q}{1-q}\right)\tfrac{1}{2}(e_H + e_L), 1 - \tfrac{1}{2}(e_H + e_L) \right\rfloor; \text{ or}$$

(c) the pooling contract, $\left\{\left(\bar{w}^{c}_{H}, e_H\right), \left(\bar{w}^{c}_{H}, e_H\right)\right\}$, is preferred if

$$t_c(1-2\beta) < 1 - \left(\tfrac{k-q}{1-q}\right)\tfrac{1}{2}(e_H + e_L).$$

Further, if $\beta \in \left(\frac{1}{2}, 1\right]$, the pooling contract, $\left\{\left(\bar{w}^{c}_{H}, e_H\right), \left(\bar{w}^{c}_{H}, e_H\right)\right\}$, is a Pareto optimal contract for $t_c \to \infty$. Otherwise, if $\beta \in \left[0, \frac{1}{2}\right)$, the pooling contract, $\left\{\left(\bar{w}^{c}_{L}, e_L\right), \left(\bar{w}^{c}_{L}, e_L\right)\right\}$, is optimal for $t_c \to \infty$. If $\beta = \frac{1}{2}$, either contracts described in (a)-(b) is preferred for $t_c \to \infty$.

Corollary 3. The pooling contract, $\left\{\left(\bar{w}^{c}_{H}, e_H\right), \left(\bar{w}^{c}_{H}, e_H\right)\right\}$, is never chosen if $k \to \infty$ and/or $q \to 1$. The separating contract, $\left\{\left(w_H^{ch^{**}}, e_H\right), \left(w_L^{cl^{**}}, e_L\right)\right\}$, is never chosen if $k \to 1$ and $q \to 0$.

Proposition 3 suggests that even for large t_c, social interaction variable β—which can also be interpreted as "getting-to-know" the composition of the group—plays a pivotal role in determining the optimal contract that the principal has to offer to an agent.

Consider, first, the case of insiders (i.e., $c = N$). If the composition of the group is mainly insiders ($\beta \to 1$) and if the agents within the organization know that this is indeed the case, their interaction among like-minded insiders allows them to learn, build, and internalize the prescribed behavior. The ideal behavior, when β is large, is approximately high-level effort, $e^*(N) \rightarrow e_H$. With the intense social interaction among insider agents coupled with their putting much weight on the importance of conforming to the ideal behavior (i.e., $\beta \rightarrow 1$ and $t_N \rightarrow \infty$, respectively), the principal realizes higher expected profits if she offers the pooling contract $\left\{\left(\bar{w}_H^N, e_H\right), \left(\bar{w}_H^N, e_H\right)\right\}$. She does not have to incur additional compensation for insiders due to nonconformity when in fact both types do conform to the ideal behavior. On the other hand, if t_N is magnified and if the composition of the group is mainly outsiders (i.e. $t_N \rightarrow \infty$, $\beta \rightarrow 0$), the principal generates higher expected profits if she offers a pooling contract $\left\{\left(\bar{w}_L^N, e_L\right), \left(\bar{w}_L^N, e_L\right)\right\}$ instead.

How is this related to social identification? The conscious identification by an agent to the group of insiders and the intensification of within-group members' conformist behavior, as firm membership becomes more salient ($t_N \rightarrow \infty$), are enough to categorize them as one and the same—insiders. Thus the accentuation effect. The underlying motivation of this effect is that the categorization serves to highlight the similarities of insiders, reflected in the stereotypic norms (i.e., ideal effort) prescribed by the group. This effect is translated into the firm's offer of a pooling contract. The characterization of the pooling contract (either all insiders accept the same high wage, $\bar{w}_H^N$, and exercise the same high-effort level, e_H, or all insiders accept the same low-wage, $\bar{w}_L^N$, and exert the same low level of effort, e_L) depends on how the prescribed behaviors are set within the organization. In other words, t_N, when used as an instrument in determining which contract the principal should offer, should be interpreted in the social environment of the group, including how social interaction and social influence affect the prescribed/ideal behavior. This is represented by β. A pooling equilibrium is thus a manifestation of the accentuated homogeneity of members of a social taxonomy.

The only exception to the accentuation is when $\beta = \frac{1}{2}$ holds, even for $t_N \rightarrow \infty$. Under this circumstance, the type of contract offered depends on the value of q and k. A possible explanation to the multiplicity of contractual outcome is that a 50-50 split between insiders and outsiders working at the firm corresponds to a "confused" state of affairs. The ideal behavior, $e^*(N) = \frac{1}{2}e_H + \frac{1}{2}e_L$, does not result in accentuated characteristics.

Moreover, when firm membership becomes less significant and conformist behavior becomes less pertinent so that $t_N \rightarrow 0$ regardless of the value of β, insiders do not exaggerate their similarities (no accentuated homogeneity), i.e., any contract specified in proposition 3 and its corollary is preferred, provided the conditions laid out are satisfied.

The same reasoning applies for the outsiders (i.e., $c = \dot{O}$) where a pooling contract is offered and Pareto preferred by the principal for large t_O.

4. Conclusion

At this point, it may be convenient to backtrack the analysis and examine where all the accentuation effects are and what these effects say about incentives. Typically, an observer asks: why do wages differ across social dimensions and why, in most cases, does a *single representative wage* exist for a particular dimension?

What has been shown so far is that the accentuation of similarities and differences by insiders or outsiders justifies the principal's offer of a pooling contract to an agent of either group. The findings are summarized in the following statements:

The higher t_N or t_O, the more attached an insider or an outsider to his respective group. The higher t_N or t_O, the more costly the deviation from the ideal effort becomes. The principal should compensate him more by the amount of his disutility from nonconformity. Knowing that the principal will not agree to this demand since it entails lower expected profits, the more an insider or outsider conforms to his respective ideal. This tendency reflects an actor's urge to belong to his group by embracing the dictates of the prescribed behaviors so that he internalizes more the prototypical attributes of his own group. This prototypical attributes are captured by and summarized in $e^*(N)$ or $e^*(O)$. In other words, the higher the t_N or t_O is, the more an insider-agent or an outsider-agent becomes similar to the prototypical member of his own respective group. Under adverse selection and by Pareto ranking criterion, the model has shown that the principal prefers to offer a pooling contract (high-wage and high-effort) to an insider-agent or a pooling contract (low-wage and low-effort) to an outsider-agent regardless of his ability types. These results are not really surprising. If the ideal level of effort of insiders is a high-effort level, $e^*(N)$ or e_H, an agent who socially identifies himself as an insider will, therefore, receive the high-wage, high-effort pooling contract. This contract reflects his being similar to the prototypical attribute of his group. The same reasoning applies for the outsiders. If the required or ideal-effort level of outsiders is a low-effort level, $e^*(O) = e_L$, an agent who socially identifies himself as an outsider will, therefore, receive the low-wage, low-effort pooling contract. Hence, the accentuation of similarities of within-group members. Moreover, how the pooling contract offered to an insider or to an outsider is characterized (a high-wage, high-effort contract for insiders; and low-wage, low-effort contract for outsiders) reflects the accentuation of prototypical differences of between-groups.

This is also true when social interaction and social influence are introduced. The accentuation of similarities and differences (thus, the type of contract offered) is determined by t_N or t_O, and by the composition of insiders or outsiders in the firm (β) and $(1-\beta)$). The only influence of the latter variables is on the prescribed or ideal behavior, thus the prototypical attributes of the groups. Nevertheless, provided t_N or t_O is large and provided $\beta \neq \frac{1}{2}$, a pooling contract is offered by the firm. Precisely how this pooling contract is characterized is determined by β. This confirms yet again that accentuation of similarities of within-group members and accentuation of differences of between-groups apply.

These theoretical findings on the accentuation effect suggest that contractual incentives—or wages, in particular—are not just a motivation variable per se summarizing the informational advantages (or marginal productivities, in neoclassical paradigm) of a laborer but also a culminating manifestation of stereotypes accorded by different social categories. Precisely how these wages are stereotyped or represented in a category is determined by the value attachment of agents to conformity, but more important, it also depends on the prototypical attributes of the social category.

The application of the representative wage or stereotypic wage analysed here extends to various social dimensions. As an example, wage earnings of a typical female worker are normally or representatively lower than those received by her male counterpart (of the same job position and the same job task), since either sex has to behave differently according to the prescribed behaviors of his or her social category. This is not to imply, however, that stereotyping is the main reason for the wage difference between male and female workers. On the contrary, stereotyping is just one of the many possible explanations for this difference (e.g., ability, educational attainment, experience, etc.).

In sum, the analysis provided here may contribute to the many possible explanations of why representative or stereotypic wages exist. They exist because a whole host of social dimensions define various cognitive and social groups, because conformity by a member to his or her group's ideal behavior saves on cost, and because such conformity results in accentuation of similarities among members within the group and of differences among members between groups.

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