Stereotypic Wage and Accentuation Effect[1]

by:

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Abstract

This paper extends the work of Akerlof and Kranton (2004) on social identity and economics of organisation to an adverse selection framework. Inclusion of social identity in the principal's problem alters the contracts offered to agents. A pooling contract generates high expected profits when agent attaches greater weight on conformity to ideal behaviour prescribed by his group membership. Precisely how this pooling contract is characterised depends on the ideal behaviour of the agent. This result is generalised when social interaction and social influence among members of different groups are allowed. Using the concept on *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.

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I

Introduction

Labour economists have been baffled by two trends in wage determination. First, wages vary across different social groups characterised by different social backgrounds. And, second, workers characterised 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 termed *stereotypic wage*.

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

Stereotypic wage is *not* entirely new in economics literature. It has been there even before the advent of information asymmetry revolution. In the classical and neo-classical 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 labour 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 homogeneity (and, atomism) of players in the market. If the entire competitive market is taken as *one* social category, where 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 where 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 generates higher expected profits under certain conditions and under certain instances, then non-differentiation of wage by ability types of workers qualifies a pooling wage stereotypical. Otherwise, stereotypic wage cannot exist. Again, in the context of social group formation, 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 stereotypical. The discussions presented shall build on the assumption that each social group confers social identity to its members. At the main, the model presented here derives its properties from the adverse selection setup where enough heterogeneity is introduced, e.g. ability types, which are unknown to the principal, in addition to membership of agents to various social groups, which are assumed known. The model extends the work of Akerlof and Kranton (2004) on social identity and economics of organisation to an adverse selection framework.

This paper argues that inclusion of social identity in the principal's problem alters the contracts offered to agents. A pooling contract is a Pareto optimal contract when an agent attaches greater weight on conformity to ideal behaviour prescribed by his group membership. Precisely how this pooling contract is characterised depends on the ideal behaviour of agent. This result is generalised when social interaction and social influence among members of different groups are introduced. Using the concept on *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.

The following section (II) 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 III. Section IV concludes.

II

A Model of Stereotypic Wage

A. Assumptions

Most of the assumptions introduced here are those of Akerlof and Kranton's (2004) with some refinements such as coarse partitioning, accentuation effect, social interaction, choice between high and low effort levels, and hidden information on cost of effort. These are noted in the following:

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

   Further disaggregation of categories in terms of worker's ability types is made: a high-ability type worker, *h*, and a low-ability type, *l*. Four categories defined by set $\mathbf{C}_1$, where $\mathbf{C}_1 = \{N_h, N_l, O_h, O_l\}$, are assumed. Attributes of each social category are respectively defined by the four compartments in set $\mathbf{C}_1$. Social category N_h corresponds to a group of high-ability type insiders; N_l refers to low-ability type insiders, 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 categorisation and, in our case, seven lumpy categorisations exist.[2]

One is $\mathbf{C}_2 = \{\{N_h, N_l\}, O_h, O_l\}$. Three social categories exist in set $\mathbf{C}_2$: insiders are grouped under one category regardless of ability type while outsiders are distinctly partitioned by their types. $\mathbf{C}_3 = \{\{N_h, O_h\}, N_l, O_l\}$ refers to three categories: high-ability workers are grouped together regardless of firm membership, while low-ability are finely sorted with respect to firm membership. $\mathbf{C}_4 = \{N_h, N_l, \{O_h, O_l\}\}$, outsiders are grouped under one category; $\mathbf{C}_5 = \{N_h, O_h, \{N_l, O_l\}\}$, low-ability are coarsely sorted; $\mathbf{C}_6 = \{\{N_h, N_l\}, \{O_h, O_l\}\}$, individuals are sorted by firm membership; and $\mathbf{C}_7 = \{\{N_h, O_h\}, \{N_l, O_l\}\}$, individuals are sorted by ability-types. [3]

If firm membership is the most relevant social dimension in categorisation process, then $\mathbf{C}_2$, $\mathbf{C}_4$ or $\mathbf{C}_6$ holds. On the other hand, if ability type is the most salient social dimension, $\mathbf{C}_3$, $\mathbf{C}_5$ or $\mathbf{C}_7$ applies. In this paper, *firm membership is assumed to be the most salient social dimension* to allow its influence on firm's decision to offer a contract.

[2] Lumpy categorisation exploits on the efficiency of storage and retrieval of information. This assumption has found considerable support in social psychology through cognitive parsimony such that constellations of information are stored among cognitive taxonomies in a manageable fashion. In economic terms, a "rational" individual minimises costs in storing, sorting, retrieving and processing of relevant information in decision-making process. As a result, he opts for "short-cuts" where stored objects, events, experiences, etc. are described by common attributes or labels. An individual with "bounded rationality" often experiences limitations on computational ability, cognitive organisation and utilisation of information relevant in making choices and decisions so that relying on common attributes and labels of a category is a "satisficing criterion" in decision making, see Simon (1955, 1956, 1957 and 1978). Precisely this justification alone his perception of the world is *accentuated* according to the common label of a category regardless of other qualities distinct to an object, individual, etc. This phenomenon is also known as *"accentuation effect"*. Further, when applied to social groups lumpy categorisation has great bearing on how individuals interact with others so that it results in group biases in favour of one's own in-group members and against out-group members, see Billig and Tajfel (1973), Festinger (1954), Fiske and Taylor (1991), Hogg and Abrams (1988), Hogg and Turner (1987), Levine and Campbell (1972), Perreault and Bourhis (1999), Tajfel (1978), Tajfel, *et. al.* (1971) and Taylor, *et. al*. (1978).

[3] Another type of lumpy categorisation is when workers above the organisational hierarchy are perfectly categorised while those below the hierarchy are coarsely sorted, see Fiske (1993).

According to Fryer and Jackson, "optimal categorization" is achieved when overall variation of objects relative to prototype (a representative object possessing all of the attributes of a particular category) is minimised across categories. Hence, objects with less frequency are coarsely categorised. Applying "optimal categorization" in our exercise, insiders of a particular firm are lumped altogether (the case of $\mathbf{C}_2$) because its size is necessarily smaller relative to the size of the labour market minus the insiders. Accentuated perception is unfortunately one-sided and $\mathbf{C}_2$ ignores the fact that perception is always relative to the eyes of the beholder. If firm membership is the most salient social dimension, insiders (either *h*- or *l*-type) perceive outsiders in a lumpy fashion regardless of the latter's ability type. Similarly, outsiders (either *h*- or *l*-type) view insiders a lumpy group. Thus, size has no place in accentuated perception so that "accentuation effect" is gauged on *relative* perceptions of members of various social groups.

To capture accentuated perception on similarities of characteristics of within-group members and on differences of attributes of between-group members, $\mathbf{C}_6 = \{\{N_h, N_l\}, \{O_h, O_l\}\}$ should hold. $\mathbf{C}_6$ implies that either an insider or outsider perceives members of opposite group in a lumpy fashion. Later in this section, accentuation is assumed to be captured by variable t_N or t_O. It measures the importance of keeping up with the ideal behaviour of insiders or outsiders, respectively. The higher it is the more conformity is valued. Conformity captures member's tendency to be similar. Thus, high t_N or t_O reflects within-group similarities. Not only it captures similarities of within-group members, t_N or t_O also reflects differences of characteristics of out-group members since insiders and outsiders have different ideal behaviours.

2. Self-image. An agent derives a utility, I_N, when he considers himself an insider because it endows him positive evaluation through new or improved self-image.

So does an outsider, I_O. It is assumed that identity variables I_N and I_O are deterministic or exogenous[4]. Further, we assume let $I_N > I_O$.

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*):

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

To avoid confusion, superscripts *c* and *j* denote firm membership—insider (*N*) or outsider (*O*)—and ability type—high (*h*) or low (*l*)—respectively. Ability type refers to cost of effort exertion 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. Subscript *i* denotes effort level. Thus, e^{cj} *only* signifies category membership and types, and e^{cj} takes on either of two values of effort level, e_H or e_L.

Further, let $e_H \geq e_L \geq 0$ 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. Any effort level less than two and greater than zero yields positive profits. These assumptions shall aid in ranking contracts offered by the principal due to a change in regime: t_N or t_O.

4. Prescription. Insiders and outsiders follow certain codes of behaviour which make them distinct from the opposite group. Codes of behaviour (also known as *stereotypic* norms, ideal behaviour, prescribed behaviour or prescription) are formed, ascertained, learned, and internalised by members of a group, which they see as a set of desirable criteria to influence their beliefs and courses of action. Prescribing to ideal behaviour gives insiders and outsiders utility through group

[4] 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.

acceptance and praise while deviation confers disutility including psychic costs, e.g. public rebuke, ridicule, taunt and anxieties.

Let $e^*(c)$ be the prescribed behaviour of insiders and outsiders such that $e^*(N) = e_H$ and $e^*(O) = e_L$. Since agents derive disutility from deviation, denote disutility of insiders by $t_N \left| e^*(N) - e^{Nj} \right|$, also known as social distance (Akerlof, 1997). If an insider conforms to $e^*(N)$, he experiences zero disutility (i.e. $e^{Nj} = e_H$). Further, cost of deviation is magnified by a factor t_N which measures importance of conformity, where $t_N \in [0, \infty)$. Higher t_N implies firm membership becomes more important and insiders' conformity to ideal behaviour becomes more pronounced. Similarly, an outsider suffers a corresponding disutility of deviation: $t_O \left| e^*(O) - e^{Oj} \right|$, $\forall t_O \in [0, \infty)$.

When social interaction within an organisation is introduced (later in section III), ideal behaviour of insiders and outsiders becomes $e^*(c) = \beta e_H + (1-\beta) e_L$, where $\beta \in [0,1]$. Frequency of social interaction by insiders is accounted by variable, β, which measures the number of insiders in the firm and is assumed to be exogenously given. $(1-\beta)$ refers to the number of outsiders in the firm. If $\beta \to 1$, then $e^*(c) \to e_H$. If $\beta \to 0$, then $e^*(c) \to e_L$. This suggests that ideal behaviour is a "social event", see Fang and Loury (2004).

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 $k \in (1, \infty)$ in effort exertion than an *h*-type does. An *h*-type has cost 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 principal such that the amount of effort exerted by an agent generates an equal amount of output or revenues (price of output is normalised to one) to the firm. In this case, principal perfectly observes effort levels. Suppose further that principal does not know the cost of effort of an agent but is known to him. If a low-cost agent devotes, e_i (that is $e^{ch} = e_i$), she observes gross revenue e_i and he receives wage w_i^{ch} at a cost of $\frac{1}{2}e_i^2$. If a high-cost agent deploys effort, e_i (that is $e^{cl} = e_i$), she receives gross revenue e_i and he gets wage w_i^{cl} at a cost of $\frac{k}{2}e_i^2$. Since cost of effort is unknown to the firm, she therefore assigns a probability *q* if he is a low-cost (*h*-type) and (1-*q*) if he is a high-cost (*l*-type). An agent of either type faces same reservation utility of $\bar{U}$.

Agent's Pay-off

Thus, an agent of either category has a separable A-K (Akerlof-and-Kranton type) 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

Firm has the following expected profits:

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

The role of social categorisation by firm membership under adverse selection arises from the principal's desire to discriminate workers who conforms to ideal behaviour. Firm membership gives her information on attachment of a worker to

ideal behaviour so that strong attachment influences how a contract should be designed and offered to cater to types. Conformity of an agent to ideal behaviour reduces firm's compensation (thus, it raises expected profits) since deviation from ideal creates disutility. Thus, principal wants to employ an agent who conforms to ideal behaviour.

B. Full-Information and Social Identification (Benchmark)

Consider the full-information case:

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

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

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

and

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

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

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

$$\begin{aligned} w_H^{Nh\ first-best} &= \bar{U} + \tfrac{1}{2}e_H^2 - I_N \\ w_L^{Nl\ first-best} &= \bar{U} + \tfrac{k}{2}e_L^2 - I_N + t_N\left(e_H - e_L\right) \end{aligned} \qquad \textbf{(0.1)}$$

if principal demands e_H from *h*-type insider and e_L from *l*-type insider. On the other hand, if principal demands high-effort level from both types (i.e. $e^{Nh} = e^{Nl} = e_H > 0$) so that *l*-type's action coincides with the ideal effort of the firm, $e^*(N) = e_H$, then *l*-type insider receives wage $w_H^{Nl\ first-best} = \bar{U} + \tfrac{k}{2}e_H^2 - I_N$. Principal prefers to offer *l*-type contract

$\left(w_H^{Nl\ first-best}, e_H\right)$ over contract $\left(w_L^{Nl\ first-best}, e_L\right)$ if $t_N > \frac{k}{2}\left(e_H + e_L\right) - 1$. If keeping up with ideal is very important, $t_N \to \infty$, and/or as cost of effort exertion by *l*-type is very small, $k \to 1$, then deviation gives higher disutility. Hence, *l*-type chooses e_H to e_L.

Alternatively, principal may demand e_L from both types (i.e. $e^{Nh} = e^{Nl} = e_L \geq 0$) so that *h*-type receives $w_L^{Nh\ first-best} = \bar{U} + \frac{1}{2}e_L^2 - I_N + t_N\left(e_H - e_L\right)$. Contract $\left(w_L^{Nh\ first-best}, e_L\right)$ is preferred by the firm over contract $\left(w_H^{Nh\ first-best}, e_H\right)$ so long as $t_N < \frac{1}{2}\left(e_H + e_L\right)$. If t_N becomes large, both *h*-type and *l*-type 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 disutility of *h*-type or *l*-type is large when he deviates from the ideal.

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

$$\begin{aligned} w_H^{Oh\ first-best} &= \bar{U} + \tfrac{1}{2}e_H^2 - I_O + t_O\left(e_H - e_L\right) \\ w_L^{Ol\ first-best} &= \bar{U} + \tfrac{k}{2}e_L^2 - I_O \end{aligned} \qquad \textbf{(0.2)}$$

Consider what happens when high-effort level is demanded from both types, i.e. $e^{Oh} = e^{Ol} = e_H > 0$, but ideal effort is $e^*(O) = e_L$. In this case, new wage offer for *l*-type outsider is $w_H^{Ol\ first-best} = \bar{U} + \frac{k}{2}e_H^2 - I_O + t_O\left(e_H - e_L\right)$. Contract $\left(w_H^{Ol\ first-best}, e_H\right)$ offered to *l*-type is preferred over contract $\left(w_L^{Ol\ first-best}, e_L\right)$ if $t_O < 1 - \frac{k}{2}\left(e_H + e_L\right)$. A small t_O gives him less disutility if he deviates from his ideal effort and a small *k* reduces his disutility of effort exertion.

Alternatively, principal may ask both types to exert low level of effort, i.e. $e^{Oh} = e^{Ol} = e_L \geq 0$. Principal has higher profits if she offers *h*-type contract $\left(w_L^{Oh\ first-best}, e_L\right)$, where $w_L^{Oh\ first-best} = \bar{U} + \frac{1}{2}e_L^2 - I_O$, over contract $\left(w_H^{Oh\ first-best}, e_H\right)$ if

$t_O > 1 - \frac{1}{2}\left(e_H + e_L\right)$ holds. As t_O increases, disutility from nonconformity becomes a relevant consideration to an outsider. To minimise his loses, *h*-type prefers e_L. An *l*-type outsider, on the other hand, has zero disutility because he conforms. Hence, each accepts his respective contract $\left\{\left(w_L^{Oh\ first-best}, e_L\right), \left(w_L^{Ol\ first-best}, e_L\right)\right\}$ for $t_O \to \infty$.

C. Adverse Selection and Social Identification

<u>Insiders (N)</u>: ($e^*(N) = e_H$)

$$\underset{\left\{w_i^{Nh},\, w_i^{Nl}\right\}_{i=H,L}}{\text{Max}} \quad \mathrm{E}[\pi] = q\left(e^{Nh} - w_i^{Nh}\right) + (1-q)\left(e^{Nl} - w_i^{Nl}\right) \qquad \textbf{(P1.0)}$$

s.t.
$$w_i^{Nh} - \tfrac{1}{2}\left(e^{Nh}\right)^2 + I_N - t_N \left|e^*(N) - e^{Nh}\right| \geq \bar{\mathrm{U}} \qquad \left(\mathrm{PC_i^{Nh}}\right)$$
$$w_i^{Nl} - \tfrac{k}{2}\left(e^{Nl}\right)^2 + I_N - t_N \left|e^*(N) - e^{Nl}\right| \geq \bar{\mathrm{U}} \qquad \left(\mathrm{PC_i^{Nl}}\right)$$
$$w_i^{Nh} - \tfrac{1}{2}\left(e^{Nh}\right)^2 + I_N - t_N \left|e^*(N) - e^{Nh}\right| \geq w_i^{Nl} - \tfrac{1}{2}\left(e^{Nl}\right)^2 + I_N - t_N \left|e^*(N) - e^{Nl}\right| \qquad \left(\mathrm{IC_i^{Nh}}\right)$$
$$w_i^{Nl} - \tfrac{k}{2}\left(e^{Nl}\right)^2 + I_N - t_N \left|e^*(N) - e^{Nl}\right| \geq w_i^{Nh} - \tfrac{k}{2}\left(e^{Nh}\right)^2 + I_N - t_N \left|e^*(N) - e^{Nh}\right| \qquad \left(\mathrm{IC_i^{Nl}}\right)$$

Three equilibrium contracts solve program (P1.0).

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

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

Wage offers are lower by the amount of utility that either type derives from being an insider, I_N. Further, *l*-type is compensated for the additional disutility he gets from deviation, $t_N\left(e_H - e_L\right)$, while *h*-type receives compensation not from deviation (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 separating contract

equals $\frac{1}{2}\left(e_H^2 - e_L^2\right) - t_N\left(e_H - e_L\right)$. 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 candidate *pooling* equilibrium (A) with the following properties: both types exert the same low level of effort (i.e. $e^{Nh} = e^{Nl} = e_L \geq 0$) and receive the same wage level:

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

By accepting pooling (A), *h*-type agent gains positively while *l*-type worker is indifferent between accepting (A) and not accepting.

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

$$\hat{w}_H^N = \hat{w}_H^{Nh} = \hat{w}_H^{Nl} = \bar{U} + \frac{k}{2}e_H^2 - I_N \qquad \textbf{(1.3)}$$

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

Separating contract is preferred over pooling (A) if it generates higher expected profits relative to that under contract (A), or if this condition holds:

$$t_N > \frac{1}{2}\left(e_H + e_L\right) - 1, \qquad \forall q \in \left(0,1\right] \qquad \textbf{(1.4)}$$

Separating contract is also preferred over pooling (B) if:

$$t_N < \left(\frac{k-q}{1-q}\right)\frac{1}{2}\left(e_H + e_L\right) - 1, \qquad \forall q \in \left[0,1\right) \qquad \textbf{(1.5)}$$

As conformity becomes more important, $t_N \to \infty$, separating contract is chosen over pooling (A). Pooling (B) is also chosen over separating contract, if $t_N \to \infty$. Further, as cost of effort exertion by *l*-type rises (*k* becomes large), then principal chooses to offer separating contract.

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

Further, as $t_N \to \infty$ so that disutility of nonconformity becomes a relevant consideration to agents, pooling (B) is preferred over separating contract; the latter is in turn preferred over pooling (A). This result is not really surprising. For an insider, with high level of effort, a pooling contract where either type receives same wage $\hat{w}_H^N$ and deploys same high effort, e_H, is best offered when firm membership becomes more relevant. 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. As $t_N \to 0$, we are led to the standard adverse selection problem where the only effect of social identity is it reduces pay-off by I_N and where the choice of contract offered by the firm depends critically on parameters *q* and *k*.

The interpretation of *k* and *q* should not be taken as they are, rather they should be interpreted in relation to the value of t_N. If *l*-type's effort exertion becomes more costly (i.e. $k \to \infty$), and/or if *h*-type becomes more likely (i.e. $q \to 1$), offering pooling (B) is not a better strategy for firm. Otherwise, principal will not offer separating wage to insider-workers.

Thus,

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

(i). pooling contract, $\left\{\left(\hat{w}_L^N, e_L\right), \left(\hat{w}_L^N, e_L\right)\right\}$, is preferred if $t_N < \frac{1}{2}\left(e_H + e_L\right) - 1$;

(ii). separating contract, $\left\{\left(w_H^{Nh*}, e_H\right), \left(w_L^{Nl*}, e_L\right)\right\}$, is preferred if $t_N \in \left[\frac{1}{2}\left(e_H + e_L\right) - 1,\ \left(\frac{k-q}{1-q}\right)\frac{1}{2}\left(e_H + e_L\right) - 1\right]$; or

(iii). 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.

Corollary 1. 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 $q \to 1$. 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 $q \to 0$.

<u>Outsiders</u>: ($e^*(O) = e_L$)

$$\underset{\left\{w_i^{Oh},\, w_i^{Ol}\right\}_{i=H,L}}{\text{Max}} \quad \mathrm{E}[\pi] = q\left(e^{Oh} - w_i^{Oh}\right) + (1-q)\left(e^{Ol} - w_i^{Ol}\right) \qquad \textbf{(P2.0)}$$

s.t.
$$w_i^{Oh} - \tfrac{1}{2}\left(e^{Oh}\right)^2 + I_O - t_O\left|e^*(O) - e^{Oh}\right| \geq \bar{\mathrm{U}} \qquad \left(\mathrm{PC_i^{Oh}}\right)$$
$$w_i^{Ol} - \tfrac{k}{2}\left(e^{Ol}\right)^2 + I_O - t_O\left|e^*(O) - e^{Ol}\right| \geq \bar{\mathrm{U}} \qquad \left(\mathrm{PC_i^{Ol}}\right)$$
$$w_i^{Oh} - \tfrac{1}{2}\left(e^{Oh}\right)^2 + I_O - t_O\left|e^*(O) - e^{Oh}\right| \geq w_i^{Ol} - \tfrac{1}{2}\left(e^{Ol}\right)^2 + I_O - t_O\left|e^*(O) - e^{Ol}\right| \quad \left(\mathrm{IC_i^{Oh}}\right)$$
$$w_i^{Ol} - \tfrac{k}{2}\left(e^{Ol}\right)^2 + I_O - t_O\left|e^*(O) - e^{Ol}\right| \geq w_i^{Oh} - \tfrac{k}{2}\left(e^{Oh}\right)^2 + I_O - t_O\left|e^*(O) - e^{Oh}\right| \quad \left(\mathrm{IC_i^{Ol}}\right)$$

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

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

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

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

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

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

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

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

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

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

Principal chooses separating contract over pooling contract (C) if

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

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

In other words, as t_O becomes large, disutility of *h*-type outsider arising from deviation is amplified so that he will have to be compensated more (thus, principal's expected profits are lower). Principal does better if she offers him pooling contract (C), $\left\{\left(\hat{w}_L^O, e_L\right), \left(\hat{w}_L^O, e_L\right)\right\}$, under which both *h*-type and *l*-type deploys same low-effort level, e_L. *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 over pooling contract (D) if

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

If conforming to ideal effort of outsiders becomes more important ($t_O \to \infty$),cost of deviation by *both* types is rather large. Both *h*- and *l*-type outsiders exert the same high-effort level under pooling contract (D), $\left\{\left(\hat{w}_H^O, e_H\right), \left(\hat{w}_H^O, e_H\right)\right\}$. Disutility is even magnified when outsider-agents put big weight on conformity. This calls for principal to offer separating contract, $\left\{\left(w_H^{Oh*}, e_H\right), \left(w_L^{Ol*}, e_L\right)\right\}$. Under which, only *h*-type suffers from disutility of nonconformity, while *l*-type 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 ideal is

unimportant, then, accepting pooling contract (D) gives approximately zero social distance. Thus, pooling equilibrium (D) is a profitable contract.

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

We, thus, summarise:

Proposition 2. Given q, t_O, I_O, $e^*(O) = e_L$ and for $e_H \geq e_L \geq 0$ and by Pareto criterion, 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,

(i). pooling contract, $\left\{\left(\hat{w}_L^O, e_L\right), \left(\hat{w}_L^O, e_L\right)\right\}$, is preferred if $t_O > 1 - \frac{1}{2}\left(e_H + e_L\right)$;

(ii). separating contract, $\left\{\left(w_H^{Oh*}, e_H\right), \left(w_L^{Ol*}, e_L\right)\right\}$, is preferred if $t_O \in \left[1 - \left(\frac{k-q}{1-q}\right)\frac{1}{2}\left(e_H + e_L\right),\ 1 - \frac{1}{2}\left(e_H + e_L\right)\right]$; or

(iii). pooling contract, $\left\{\left(\hat{w}_H^O, e_H\right), \left(\hat{w}_H^O, e_H\right)\right\}$, is preferred if $t_O < 1 - \left(\frac{k-q}{1-q}\right)\frac{1}{2}\left(e_H + e_L\right)$.

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

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

III

Social Interaction and Ideal Behaviour

One of the comments that this paper desires to single out in the Akerlof and Kranton model on social identification and economics of organisation is the assumption that ideal effort is independently imposed within the organisation 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 that ideal behaviour 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 short- and/or long-term goals of a firm.

Ideal behaviour being independently imposed is highly implausible. Individuals in the process of social interaction may somehow influence prescribed codes 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, set of social categories and status of different categories. This happens, for instance, when a firm starts a series of advertising crusades to build up or enhance her 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 her employees should behave in response to this altered image or identity. Simply put, ideal behaviour, 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 behaviour) is a social phenomenon. This is not really a new concept in social psychology (refer to "referent informational influence" theory by Turner (1981), see also Hogg and turner (1987)). Prescriptions, being a social event, are set within a social category where, after individuals have defined and identified themselves members of a particular social category, they *form, ascertain, learn and*

internalise stereotypic norms and attributes of that category, different from those defined by other groups. They take these norms and attributes, a set of desirable criteria to influence their beliefs and courses of action.

Proceeding to our model, assume that ideal behaviour is a product of how frequent or involved players are in social interaction process with other members of same or different social identity. Frequency of social interaction by insiders is measured by variable, β. β is postulated to be the number of insiders working in the firm. This variable is normalised to take the values between 0 and 1, $\beta \in [0,1]$, so that $1-\beta$ corresponds to frequency of outsiders within the firm. 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 greater the number of insiders in the organisation, i.e. as composition of the organisation becomes more homogenously distributed towards insiders or as like-minded insider-workers interact more with members of same social category, $\beta \to 1$, then ideal effort of insiders becomes high level of effort, $e^*(N) \to e_H$. Similarly for outsiders, $e^*(O) = \beta e_H + (1-\beta)e_L$, the greater the number of outsiders working within the firm, as $\beta \to 0$, ideal effort of outsiders approaches e_L, $e^*(O) \to e_L$. Note, however, that it is possible to conjure $e^*(N) \to e_L$ as $\beta \to 0$, or $e^*(O) \to e_H$ as $\beta \to 1$.

A better way of understanding social interaction in real life is if adjustment costs are incorporated. These costs could be captured by some taste parameters accounting for aversion or "degree of intolerance" experienced by an insider or an outsider when he associates himself with opposite group. Adjustment costs arise when one violates existing norms that could affect his enthusiasm to participate in social interaction or his motivation to contribute to productive activities within the firm. Fortunately, Alesina and la Ferrara (2000) with further extension by Chatterjee and Sarangi (2004) have provided

a framework where social interaction variables β and $(1-\beta)$ *implicitly* account for these adjustment costs so that β and $(1-\beta)$ are endogenously derived.[5]

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

<u>Insiders and Outsiders</u>: $\left(e^{*}(c)=\beta e_H+(1-\beta)e_L, \quad \forall\beta\in[0,1],\ c\in\{N,O\}\right)$

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

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[5] 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 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 $U_O=U(a,\theta_N)\geq\underline{U}$ and $U_N=U(b,\theta_O)\geq\underline{U}$ 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 $n_O^{*}=\text{Prob}\left\{a^{*}\leq U^{-1}(\underline{U},\theta_N)\right\}n_O$. Correspondingly, the number of insiders who want to participate and socially interact with other members of opposite social category within the firm is $n_N^{*}=\text{Prob}\left\{b^{*}\leq U^{-1}(\underline{U},\theta_O)\right\}n_N$. As shown by Alesina and la Ferrara, the *equilibrium* composition of insiders within the firm is provided by the proportion of participants in the social interaction, $\beta=\frac{n_N^{*}}{n_O^{*}+n_N^{*}}$. $1-\beta=\frac{n_O^{*}}{n_O^{*}+n_N^{*}}$ is the equilibrium composition of outsiders within the firm.

$$w_H^{ch**} = \bar{U} + \tfrac{1}{2}e_H^2 - I_c + \tfrac{(k-1)}{2}e_L^2 + t_c(1-\beta)(e_H - e_L)$$
$$w_L^{cl**} = \bar{U} + \tfrac{k}{2}e_L^2 - I_c + t_c\beta(e_H - e_L) \qquad \textbf{(3.1)}$$

Wage of *h*-type agent (of either firm membership *c*) is greater than *l*-type's if the condition $\frac{\frac{1}{2}(e_H + e_L)}{2\beta - 1} > t_c$ for $\beta \neq \frac{1}{2}$ holds. The last terms of w_H^{ch**} and w_L^{cl**} in equation (3.1) are additional compensations for *l*- and *h*-type agents of any firm membership arising from disutility of deviation. For large number of outsider-agents socially interacting within the organisation (so that $\beta \to 0$), the more likely that category-*c* agents prescribe to ideal effort $e^*(c) \to e_L$. Under 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 ideal effort $e^*(c) \to e_H$; while *h*-type is not.

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

for $e^{ch} = e^{cl} = e_L \geq 0$: $\left\{\left(\overline{w}_L^c, e_L\right), \left(\overline{w}_L^c, e_L\right)\right\}$ where

$$\overline{w}_L^c = \overline{w}_L^{ch} = w_L^{cl**} = \bar{U} + \tfrac{k}{2}e_L^2 - I_c + t_c\beta(e_H - e_L) \qquad \textbf{(3.2)}$$

for $e^{ch} = e^{cl} = e_H > 0$: $\left\{\left(\overline{w}_H^c, e_H\right), \left(\overline{w}_H^c, e_H\right)\right\}$ where

$$\overline{w}_H^c = \overline{w}_H^{ch} = \overline{w}_H^{cl} = \bar{U} + \tfrac{k}{2}e_H^2 - I_c + t_c(1-\beta)(e_H - e_L) \qquad \textbf{(3.3)}$$

Separating contract is preferred by principal if it gives her higher expected profits than that generated by pooling contract (A'), or

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

If $\beta \to 1$ so that $e^*(c) \to e_H$ and if $t_c \to \infty$, both *h*- and *l*-types have large disutility if they deviate from ideal effort by accepting pooling contract $\left\{\left(\overline{w}_L^c, e_L\right), \left(\overline{w}_L^c, e_L\right)\right\}$. 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 pooling contract minimises the disutility of nonconformity.

Separating contract is preferred over pooling contract (B') if :

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

If $\beta \to 1$ so that $e^*(c) \to e_H$ and if $t_c \to \infty$, both *h*- and *l*-type can offset high disutility by not deviating from ideal effort. This is true when pooling contract $\left\{\left(\overline{w}_H^c, e_H\right), \left(\overline{w}_H^c, e_H\right)\right\}$ 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, separating contract minimises disutility of nonconformity since only *h*-type deviates from ideal while *l*-type conforms.

Again, ranking expected profits generated by candidate contracts can be performed under various regimes. If $t_c \to \infty$ and $\frac{1}{2} < \beta \le 1$, pooling contract (B') yields higher expected profits and is, thus, preferred by principal over separating contract. The latter contract is, in turn, preferred over pooling (A'). If $t_c \to \infty$ and $0 \le \beta < \frac{1}{2}$, our ranking is reversed. Interestingly, even if $t_c \to \infty$ and so long as $\beta = \frac{1}{2}$, ranking cannot be performed since either a separating contract or a pooling contract is preferred depending on the values of parameters *q* and *k*. In the usual fashion, existence of multiple equilibria does extend to a

regime when $t_c \to 0$ and for whatever values of β. These are summarised 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 $e_H \geq e_L \geq 0$ and by Pareto criterion, 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,

(i). pooling contract, $\left\{\left(\overline{w}_L^c, e_L\right), \left(\overline{w}_L^c, e_L\right)\right\}$, is preferred if $t_c(1-2\beta) > 1 - \frac{1}{2}(e_H + e_L)$;

(ii). separating contract, $\left\{\left(w_H^{ch**}, e_H\right), \left(w_L^{cl**}, e_L\right)\right\}$, is preferred if $t_c(1-2\beta) \in \left[1 - \left(\frac{k-q}{1-q}\right)\frac{1}{2}(e_H + e_L),\ 1 - \frac{1}{2}(e_H + e_L)\right]$; or

(iii). pooling contract, $\left\{\left(\overline{w}_H^c, e_H\right), \left(\overline{w}_H^c, e_H\right)\right\}$, is preferred if $t_c(1-2\beta) < 1 - \left(\frac{k-q}{1-q}\right)\frac{1}{2}(e_H + e_L)$.

Further, if $\beta \in \left(\frac{1}{2}, 1\right]$, pooling contract, $\left\{\left(\overline{w}_H^c, e_H\right), \left(\overline{w}_H^c, e_H\right)\right\}$, is a Pareto optimal contract for $t_c \to \infty$. Otherwise, if $\beta \in \left[0, \frac{1}{2}\right)$, pooling contract, $\left\{\left(\overline{w}_L^c, e_L\right), \left(\overline{w}_L^c, e_L\right)\right\}$, is optimal for $t_c \to \infty$. If $\beta = \frac{1}{2}$, either contracts described in *(i)-(iii)* is preferred for $t_c \to \infty$.

Corollary 3. Pooling contract, $\left\{\left(\overline{w}_H^c, e_H\right), \left(\overline{w}_H^c, e_H\right)\right\}$, is never chosen if $k \to \infty$ and/or $q \to 1$. 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 a group-- plays a pivotal role in determining the optimal contract that principal has to offer to an agent.

Consider, first, the case of insiders (i.e. $c = N$). If the composition of a group is mainly insiders ($\beta \to 1$) and if agents within the organisation know that this is indeed the case, their interaction among like-minded insiders allows them to learn, build and internalise the prescribed behaviour. Ideal behaviour, when β is large, is approximately high level effort, $e^*(N) \to e_H$. If $\beta \to 1$ and $t_N \to \infty$, the principal realises higher expected profits if she offers pooling contract $\left\{\left(\overline{w}_H^N, e_H\right), \left(\overline{w}_H^N, e_H\right)\right\}$. She does not have to incur additional compensation for insiders due to nonconformity when in fact both types do conform to ideal behaviour. On the other hand, if t_N is large and if the composition of a group is mainly outsiders (i.e. $t_N \to \infty$ and $\beta \to 0$), principal generates higher expected profits if she offers a pooling contract $\left\{\left(\overline{w}_L^N, e_L\right), \left(\overline{w}_L^N, e_L\right)\right\}$ instead.

How is this related to social identification? Conscious identification by an agent to a group of insiders who put much weight on conformity is enough to categorise him belonging to the same group: insiders. The underlying motivation of this effect is that categorisation serves to highlight the similarities of insiders, reflected in stereotypic norms (i.e. ideal effort). This effect is reflected in firm's offer of a pooling contract. The characterisation of a pooling contract depends on how prescribed behaviour is set within the organisation. In other words, t_N, when used as an instrument in determining which contract principal should offer, should be interpreted in the social environment of a group including how social interaction and social influence affect prescribed/ideal behaviour. This is represented by β. A pooling equilibrium is, therefore, a manifestation of accentuated homogeneity of members of a social taxonomy.

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

Moreover, when firm membership becomes less significant and conformist behaviour becomes less pertinent so that $t_N \to 0$ 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 outsiders (i.e. $c = O$) where a pooling contract is offered and gives higher expected profits to principal for large t_O.

IV

Final Remarks – Accentuation Effect and Stereotypic Wage

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

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

The higher t_N or t_O is, the more attached an insider or an outsider to his respective group. The higher t_N or t_O is, the more costly deviation from ideal effort becomes. 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 her 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 prescribed behaviours so that he internalises the prototypical attributes of his own group. This prototypical attributes are captured by and summarised 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 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 ideal level of effort of insiders is a high-effort level, $e^*(N) = e_H$, an agent who socially identifies himself as an insider will, therefore, receive a high-wage-high-effort pooling contract. This contract reflects his being similar to the prototypical attribute of his group. The same reasoning applies for 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 a low-wage-low-effort pooling contract. Hence, similarities of within-group members are accentuated. Moreover, the way that the pooling contract offered to an insider or to an outsider is characterised (a high-wage-high-effort contract for insiders and low-wage-low-effort contract for outsiders) reflects accentuation of prototypical differences of between-groups.

This is also true when social interaction and social influence is introduced. 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 within the firm (β and $(1-\beta)$). The only influence of the latter variables is on the prescribed or ideal behaviour—the prototypical attributes of a group. 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 characterised 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 accentuation effect suggest that contractual incentives, or wages, in particular, are not just a motivation variable per se summarising the informational advantages (or marginal productivities, in neoclassical paradigm) of a

labourer 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 so, it also depends on the prototypical attributes of a social category.

The application of 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 prescribed behaviours of her and his respective social category. By no implication whatsoever is meant that stereotype is the main reason of wage difference between male and female workers. On the contrary, stereotype is just one of the many possible explanations of this difference (e.g. ability, educational attainment, experience, etc.).

In summary, the analysis provided here may contribute to the many possible explanations on why representative or stereotypic wages exist. They do exist because a whole host of social dimensions define various cognitive and social groups, because conformity by a member to his/her group's ideal behaviour 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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