

# Proud to be Pro-Social

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## Abstract

Understanding why people respect social norms and exhibit pro-social behavior, many times contrary to their material interest, is an important topic in social science. This paper studies the role of emotions such as pride (and shame). Based on various psychological literature, we argue that pride and shame are (i) external (ii) context dependent and (iii) relative feelings. In order to accommodate those psychological matters, we study a preference relation over sets and interpret as a following two-stage decision making process. In the ex-ante stage, the decision maker *privately* chooses a set of lotteries. In contrast, in the ex-post stage, the decision maker *publicly* chooses a lottery from the chosen set of available lotteries. Our axioms are the following.

**AXIOM 1**(Order):  $\succsim$  is complete and transitive.

**AXIOM 2a**(Lower Semi-Continuity): For any  $A \in \mathcal{A}$ ,  $\{B \in \mathcal{A} : A \succsim B\}$  is closed.

**AXIOM 2b**(Upper von Neumann-Morgenstern Continuity):  $A \succ B \succ C$  implies  $B \succ \alpha A + (1 - \alpha)B$  for some  $\alpha \in (0, 1)$ .

**AXIOM 2c**(Upper Singleton Continuity): For any  $x \in \Delta(Z)$ ,  $\{\{y\} \in \mathcal{A} : \{y\} \succsim \{x\}\}$  is closed.

**AXIOM 3**(Independence):  $A \succ B$  implies  $\alpha A + (1 - \alpha)C \succ \alpha B + (1 - \alpha)C$  for all  $\alpha \in (0, 1]$ .

**AXIOM 4**( $u$ -Dominance Monotonicity): For any  $A, B \in \mathcal{A}$ ,  $A \succ_u B$  implies  $A \cup B \succ A$ .

**AXIOM 5**( $u$ -Indifference Set Betweenness): For any  $A, B \in \mathcal{A}$ ,  $A \sim_u B$  and  $A \succ B$  implies  $A \succ A \cup B \succ B$ .

where  $\succ_u$  is defined by  $A \succ_u B \Leftrightarrow \exists x \in A \forall y \in B : \{x\} \succ \{y\}$ . We show that  $\succ$  satisfies Axiom1,2a-c,3,4 and 5 if and only if  $\succ$  is represented by

$$V(A) = \max_{x \in A} \left[ u(x) + \left\{ w(x) - \max_{y \in M_u(A)} w(y) \right\} \right]$$

where  $M_u(A) = \arg \max_A u$ . We interpret  $u$  as a selfish utility function and  $w$  as a social norm function. In addition, we interpret  $w(x) - \max_{y \in M_u(A)} w(y)$  as the benefit of pride. As the representation suggests, an agent is pride if her not selfish but pro-social decisions are publicly observed. Finally, we will show that  $u$  and  $w$  are identified up to affine transformation.