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**JUSTICE AND EFFICIENCY IN ECONOMIC RELATIONS:
EXPLAINING COLLABORATION AND CONFLICT IN THE FIRM
AND CHOICE IN ULTIMATUM GAMES**

SUMMARY

Individual preferences are sensitive to particular economic interactions. Complex psychological phenomena affect the meaning and ordering of their objects according to different institutional patterns and strategical arrangements. We provide an agency model that explains preference endogeneity in reference to higher order normative principles and individual moral judgment. We use this model to explain the organization of labor regimes in the firm and the formation of preferences and choice in ultimatum games. In the firm, workers judge the fairness of the distribution of the gains from cooperation and consequently adopt working attitudes that determine the equilibrium level of information asymmetry, transaction costs and inefficiency. We explore from this perspective the formation and distribution of gains from cooperation, and their relation with the adoption of different labor regimes. A regime in which the parties maintain fair working relations clears up potential market and information failures and may generate a collaborative equilibrium enhancing maximum global efficiency. Other distributive strategies, however, uncover such failures and reduce efficiency. "Efficiency wage" regimes, while having the potential for increasing fairness and efficiency, may evolve into relations generating transfers of value in favor of the firm considered unfair by the workers; and produce resource misallocation and an equilibrium where strongly dissonant workers constitute a "moral hazard" for the firm. We analyze the conditions that determine the firm's choice.

I. INTRODUCTION

Workers' attitudes towards sharing resources and information with firm managers are usually very sensitive to the organization of capital-labor interaction. Managers may use the high sensibility of workers' beliefs and preferences to enhance labor productivity and efficiency (Akerlof, 1982; Doeringer et al, 1986; Doeringer, 1991). Such working relations and managerial practices are referred to as "superefficient". They include good human relations, participative decision making, job enrichment, work rotation, and a "fair" pay. These practices will stimulate individual propensity to work, collaborate, share information and receive new training (Brown, 1980; Mowday, Porter, and Steers, 1982; Deming, 1991; Kohn, 1993).

Many firms adopt instead practices that reinforce conflictive capital-labor relationships and produce welfare loss (Reynolds, 1951; Doeringer and Piore, 1985; Doeringer, 1991). The violation of the workers' legal or customary distribution or procedural rights, the systematic criticism of their performance and intense supervision of their work, the combined use of "sticks and carrots", the physical or psychological isolation of workers to control potential organization, etc., constitute restrictions to effective socialization, suppress intelligence, self-esteem and creativity, and produce in the workers feelings of vulnerability and marginalization. As a consequence, workers accumulate aversion towards supervisors and managers, turn their energies to frustrate the projects of the firm (MacIntyre, 1985), become opaque and unpredictable to the firm, increasing information imperfections (Scott, 1985) and build up market power affecting other workers (e.g., they hoard specific labor skills and information; Thurow, 1984). Workers may also experience lack of energy, guilt, identity crisis, self-depreciation, and profound apathy or depression (Fromm & Maccoby, 1973), which will reflect in a lack of commitment and productivity (Buunk, et al, 1993; Ostroff, 1993).

Why would firms choose to adopt strategies that generate moral hazard? This paper explains this apparent paradox by exploring how labor contracting and management affect the formation and distribution of gains of cooperation between labor and capital. To narrow our focus, we analyze situations in which both the workers' effort and productivity are non-contractible, and compare the traditional "efficiency wages" regime (as described by Shapiro & Stiglitz, 1985) with "superefficient" labor regimes having similar contractual elements (i.e., a fixed wage rate and a working standard). In this framework, we analyze the role of the principles of distributive justice and reciprocity, which are determinant in the formation and destruction of labor commitment¹.

Given this framework, we provide theoretical support for the following propositions: (1) There are situations in which workers' moral deficiency (defined as their incapacity to behave according to their own values of justice given the power that internal or external incentives exert over them) justify the use of "efficiency wages" as a short-run method to increase efficiency and maximize profits. This proposition corresponds to the standard idea behind efficiency wages (see Shapiro & Stiglitz, 1985; Weiss, 1990). (2) However, the firm's observance of the workers' values of justice will also increase efficiency and sometimes maximize profits. (3) If the workers are morally sound (incentives are not sufficient to induce them to deviate from their beliefs), such observance will take the economy, in the absence of coordination problems, to a unique efficient equilibrium that will attain welfare maximization. (4) The purpose of an "efficiency wages" regime may not be to correct a problem of opportunism in workers' behavior and

¹ These principles of economic normative behavior are well recognized by social psychologists and anthropologists (Malinowski, 1921; Thurnwald, 1932; Polanyi, 1975) but have only recently been associated with economic analysis (for a survey, see Hausman & McPherson, 1993). Economists have increasingly accepted the importance of the notions of fairness in market regulation (Kahneman, Knetsch and Thaler, 1986), price and wage stickiness (Hirschman, 1970; Akerlof, 1982), and rigidities in the operation of customer markets (Okun, 1981).

increase efficiency, but to generate a transfer of value running from the workers to the firm that may maximize profits but, because it is perceived as unfair by the workers, increases informational failure and supervision costs and reduces efficiency. We refer to such process as exploitation.

We analyze the foundations of these propositions in the following two sections. Section II proposes a model of human agency that incorporates normative reasoning and is useful for game-theoretical analysis. Considerable evidence derived from experimental ultimatum games supports the hypotheses that economic agents consider the fairness of distribution and may be willing to forego income opportunities when they imply transactions perceived as unfair, or alternatively they may be willing to pay a cost to punish unfair allocators, i.e., they practice reciprocity (Kahneman, Knetsch and Thaler, 1986; Camerer and Thaler, 1995). In this section, we provide analytical examples of how a more developed model of normative reasoning may explain these behaviors.

Section III enunciates and proves the central theorem of the paper supporting our four propositions. Proposition (4) deserves some introduction. Most economists think of "efficiency wages" as a solution and not a cause of inefficiency. More generally, they believe that strategies chosen by a profit maximizing firm will not reduce their internal productive efficiency and increase transaction costs. However, the firm is an institution regulating capital-labor cooperation, and according to Douglass North: "Institutions are not necessarily or even usually created to be socially efficient; rather they, or at least the formal rules, are created to serve the interests of those with the bargaining power to devise new rules" (North, 1992, page 16). In the firm, the unfair exercise of bargaining power will generate incompatibility between the pursuit of the firm's interests and the well-being of the cooperative collectivity, provoking in the workers behavioral adjustments governed by the rules of reciprocity. The use of "efficiency wages" as a mechanism of exploitation will demand the destructuring of social relations that satisfy workers' claims on fair treatment, making it necessary for the firm to control their power to retribute through a costly system of supervision. To reduce the costs, the firm may institutionalize labor stratification to combine collaborative and exploitative regimes. In this paper, we explore the workers' reactions to exploitation and the institutional structures and transaction costs they generate, thus developing at the micro level Polanyi's tradition of "substantive economics" first developed in The Great Transformation (Polanyi, 1975).

Once we have analyzed the economic implications of moral reasoning, we consider how this form of intentional behavior develop (Section IV) and why it may lead to moral deficiency (Section V). The purpose of analyzing the onthogenesis of normative reasoning is twofold. First, to situate from a common developmental perspective the different models of human morality used in economic analysis. Our model captures as special cases two extreme models of morality: opportunism (as described by Williamson, 1985) and conventionalism (i.e., consistency with beliefs and norms *irrespective of outcomes* ; see Kahneman et. al., 1986; Frey, 1986; Neurborg, 1991; Miller, 1992). The general case will correspond to situations in which individuals may deviate, if rewards or punishments are sufficiently strong, from the dictates of their moral judgment, itself based on general moral values. Second, to emphasize that the development of normative reasoning is a complex process. Morality evolves in multidimensional and interactionist patterns, and most adults maintain areas of normative reasoning that are contaminated by processes that characterize earlier stages of moral judgment, facilitating the emergence of moral deficiency and internal conflict.

Moral deficiency and conflict are pervasive phenomena in modern societies (McIntyre, 1985). A full discussion of their multiple and complex causes is beyond the scope of this paper. However, we explore several situations that produce systemic moral deficiency and internal conflict in workers. We show the considerable complexity economic analysis may acquire once preferences are no longer exogenous: criteria of efficiency and justice become analytically inseparable, and information and institutional failures become endogenous.

II. THE PSYCHOLOGY OF NORMATIVE REASONING AND THE FORMATION OF PREFERENCES

1.- Normative judgment: general values and adaptable behavioral norms

Adult individuals usually guide their normative interaction with others through a complex process of normative judgment based on the acceptance of general values. These are higher order normative rules (i.e., rules that specify the norms individuals must apply in each specific context) whose reference is very broad (Smelser, 1963). They provide premises that reflect the states of social well-being that socialized individuals believe are ultimately desirable and which they use to form their daily normative judgments. Although historically determined, and group specific (they vary with gender, social class, and culture, (Van Lange, 1992)), individuals believe them to be "universal" and fundamental in the regulation of human interaction, and use them consistently for the definition of individual and collective rights and the evaluation of the legitimacy of human actions. Examples of general values that function in the working place are the claim for equitable distribution of income, the respect for individual dignity, the right to social security and the right of the people to resist injustice (Max Neef, et.al., 1986; Punzo & Meara, 1993).

Normative judgments depart from general values to generate more specific rules of behavior (i.e., norms in the usual sense). Clearly, such behavioral norms depend on the values providing the normative premises and on the situation under normative analysis. Behavioral norms resulting from individual normative reasoning may become social through human communication, or result in the qualification of existing social norms, thus becoming a source of legal or customary change.

Behavioral norms carry the motivational force of the general values from which they derive, and thus their internal reasons for individual commitment. Social psychologists have focused on understanding how and why they may constitute a force that modifies individual attitudes and actions. Well-established theories that provide light on this issue are those based on congruence models of human behavior such as Heider's balance theory (Heider, 1958) and Festinger's cognitive dissonance theory (Festinger, 1957; 1964). According to congruence models, adult people tend to maintain a balance amongst their emotional, cognitive and behavioral elements, and seek to maintain congruity with the general circumstances that surround their life (Ostroff, 1993; Sánchez, 1994). This comes from their capacity of perceptual attribution, that is, their rational evaluation of their own beliefs and actions (Harvey & Weary, 1981). Such evaluation may lead to incongruence in the elements in our own personal perceptions, preferences, beliefs, sentiments, attitudes or actions, generating emotional instability and a feeling of uneasiness referred to as dissonance. The greater dissonance becomes, the greater the urgency to acquire the necessary balance or consonance. As a consequence of dissonance, individuals will experience conscious and unconscious mental processes tending to change their desires for specific external objects, relationships and social situations, which will be reflected in the modification of their attitudes and actions.

We therefore expect the dictates of moral judgment to affect human action. Normative dictates and actions, however, may not coincide, since normative reasoning is not the only mechanism of preference formation in adult individuals. Other factors, such as prudence, greed or fear, which respond to immediate external incentives, may have important effects on individual choice (Perlman & Cozby, 1983; Glassman, 1994). Normative dictates, however, have powerful emotional content, and individuals who do not follow them remain dissonant, suffering in the long run mental confusion, unhappiness, regret and guilt, lower self-esteem, anger, anxiety or depression. Many individuals will eventually respond by changing the importance they attribute to the external factors that make them deviate from their behavioral norms, to increase the consistency of

their actions with their own normative beliefs. Even if actions may be permanently at odds with behavioral norms, they will not escape their reference.

2. The adoption of values of justice and reciprocity

Two important general values are the adoption of values of justice and reciprocity. These lie at the core of many fundamental social interactions, such as the family, patron-client relationships, kinship and community, and conform a structural basis for many social organizations in which loyalty or prestige are important, such as religious churches and political states (Polanyi, 1974; Herkovitz, 1954).

The adoption of values of justice implies the acceptances of the duty of just play in daily interaction. This reflects the recognition in each participant of the needs, aspirations and interests of the others. It usually implies the recognition of legitimate differences in income and privileges amongst individuals, social groups or nations belonging to different status or having different economic power. In modern western societies, principles of equity tend to profoundly affect beliefs on the allocation of the benefits of cooperation (Adams, 1965; Lind & Tyler, 1988). Other principles, however, compete with equity in governing the distribution and redistribution of resources and welfare in such societies, such as the principles of equality, social security and difference (Miller, 1992; Mitchell, et al, 1993). In pre-capitalist societies, the institutions of centrality and symmetry, which were essential components of the existing systems of labor division, foreign trade, taxation for public purposes, and defense provisions (Polanyi, 1975), were based on different principles of justice (e.g., redistribution and moral economy; Thurnwald, 1932; Wolf, 1966; Watts, 1984).

The recognition of differences in power and status in the definition of justice principles does not imply that they must coincide with the potential outcomes of self-interested bargaining. Individuals systematically refrain (and are expected to refrain) from using their full power capacity during joint activity due to moral constraining forces. The rationality of such ethical forces has been subject to a long-lasting philosophical debate. They may be grounded on a specific *telos*, as in Aristotle, Bhudda and modern utilitarianism, or on the autonomous pursuits of universal rational principles, as in Kant, on some type of radical uncertainty, as in Rawls, or on other factors (for surveys of theories of justice see Barry, 1989, and Hausman & McPherson, 1993). Adult individuals, however, have powerful self-seeking motivations to deviate from the principles that dictate restriction in the use of power. The operation of another ethical principle, reciprocity, regulates the reaction of people to deviant conducts that seek illegitimate opportunity or make excessive use of economic and social power.

Reciprocity is the principle of normative behavior that defines the actions necessary to restore any deviation from fair distribution or procedure and to reduce psychological dissonance. In modern societies, people feeling distress due to inequity promptly act to restore equity one way or another. In most cases, this is true even for those benefiting from inequity (Adams, 1963). Reciprocity operates by norming those actions, usually through the exchange of gifts or punishments among social and economic parties (Scott, 1985)². Such exchange is usually important in economic life, due to its role in the exchange of individual advantages in technology, information and economic power among economic agents. Reciprocity may thus affect the efficiency of cooperative action by reducing or increasing market and other institutional failures and thus transaction costs.

Let us compare the operation of these moral principles with more orthodox economic means of regulating institutional failure, such as self-interest joint ventures and contracts. Contracts, as defined by most economists, are products of hard bargaining or competition that motivate cooperation by acting on the individual's enlightened self-

²Reciprocity also regulates the actions prompted by sentiments different from injustice distress but which may accompany it, such as envy or excessive generosity and altruism.

interest. Economic analysis focus on the *stricti juris* terms of reward and punishment (e.g., pay incentives and threats of discharge, terms of repeated interaction) or on customary and social sanctions (e.g., gossiping). In contrast, moral principles motivate action through self-imposed commitment, which depends critically upon the emotions created by identification, trust and mutual respect. (In orthodox contract theory, trust and prestige have no emotional content and only reflect the subjective probabilities bayesian rational agents attribute to particular actions of other agents.) Even in modern societies, individuals interpret many practices of bargaining and competition as expressions of greed or opportunism, and attempts to make over-explicit the terms of interaction as signs of distrust or disrespect for the dignity or social status of other participants. The emotional reactions to these actions generally undermine voluntary compliance and destabilize production and exchange. All societies discourage or regulate these practices, usually through institutions connected with moral, tradition, etiquette, kinship, social hierarchy and religion (Mauss, 1954; Polanyi, 1977).

Self-enforcement contributes to one of the distinguishing features of normative behavior, that is, its diffuse and personal character. The rules of behavior derived from the principles of justice and reciprocity usually lack the temporal and spatial discreteness of formal contracts. They function more as a continuing relationship between or among persons based upon opportunity to help (or punish) and mutual expectations (Oakerson, 1988). This personal and diffuse character constitutes an important source of comprehensiveness and strength in flexible human organizations, such as the family. However, it may also cause intractable coordination problems, and become a handicap in complex production or exchange systems (Bloch, 1961).

3. Normative judgement in ultimatum games: a basic model

By modelling ultimatum games we may clarify our previous discussion. Following Camerer & Thaler (1995), we may describe these games as follows. Two players (who we call Proposer and Responder) are allotted a sum of money. Proposer offers some portion of money to Responder. If Responder accepts, she gets what was offered, and Proposer gets the rest. If Responder rejects the offer, both get nothing. In the case that Proposer and Responder only care for the monetary pay-offs of the game, game-theoretical analysis predicts a subgame perfect equilibrium in which Responder will accept any share offered by Proposer, who will offer the smallest unit of currency available. Furthermore, Responder's threats to reject any other offer will not be credible. However, the following conducts have robust empirical support: (see Kahneman, Knetsch and Thaler, 1986 and Camerer & Thaler, 1995):

- (a) Usually, individuals playing the role of Proposer will offer a larger share than predicted.
- (b) Individuals playing the role of Responder will usually be reluctant to accept positive offers which imply a very unequal and therefore unfair distribution.
- (c) Responders will be willing to pay a cost for punishing unfair offers.
- (d) Proposers may take advantage of information assymetries to increase their share (appearance of fairness is enough).

The first three conducts have been interpreted as evidence of the existence of externalities affecting the decisions of the players. The last one, however, is in tension with this interpretation. To explain the process of preference formation involved, capturing the whole set of evidence in a single analytical framework, we consider two different games. First, we analyze the classical ultimatum game, as described by Camerer & Thaler, but our friends, Proposer and Responder, now have some type of morality. They may be morally strong, morally deficient or opportunistic. In the second game, in addition, we allow Responder to punish Proposer at a certain cost. In both games, perfect equilibria will vary according to the type of morality of the players.

Suppose both Proposer and Responder, indistinctly of their moral strength, share a value of equality and believe that in an ultimatum game payoffs should be equal. Suppose they play to distribute one dollar. Let S_R be the share offered by Proposer (if Responder accepts, Proposer would obtain with $S_P = 1 - S_R$). Define the distributive gap function as:

$$T(S_P, S_R) = S_P - S_R$$

The principle of equal distribution of the dollar would mean that:

Proposition 1: "T should equal 0".

We assume that *ethical values are relevant*, i.e., both players will reason their behavioral norms independently of the incentive structure of the model. They will then believe that Proposer should satisfy:

Proposition 2: " S_R should make $T(S_P, S_R) = 0$ ",

or equivalently, that S_R should equal 0.5.

To understand what would be a normative reaction governed by the principle of reciprocity, suppose that after the distribution of the dollar Responder could choose a mechanism (i.e., a transference or a costly punishment), Θ , to correct any fairness anomaly in the payoffs of the game. A simple logical operation would result in the following behavioral norm:

Proposition 3: " Θ should make $T(S_P, S_R; \Theta(S_P, S_R)) = 0$ ".

Conformance to behavioral norms will not result from purely normative-logical reasoning, but from the players' psychological need to reduce dissonance to maximize utility. Dissonance will be an increasing function of normative incongruence as measured by the distributive gap function, i.e., $D_j = D_j(T)$, $D'_j > 0$. Proposer and Responder have one of three types of morality (A, B and C) defined by the following dissonance functions:

$$D_A(T) = T^2 + 1.5 |T|,$$

$$D_B(T) = T^2,$$

$$D_C(T) = 0$$

Utility will be a function on the individuals share and dissonance:

$$U_{ij} = S_i - D_j(T), \quad i = P, R; \quad j = A, B, C$$

Utility maximization may permit normative incongruence ($T \neq 0$) and thus a positive "optimal" dissonance. Players of type A are an example of a strong morality because their decisions will implement $T=0$ under some range of external incentives. (If Proposer is of type A, he will freely choose to be fair.) Players of type B are morally deficient because they will never implement $T=0$. Nevertheless, they will show some degree of moral response. (If Proposer is of type B, he will not be fair but will nevertheless offer a meaningful share.) Players of type C will have no moral response. Moral reasoning will have no effect on their behavior; they are opportunistic.

Finally, suppose the reservation utility of all players is zero, and that their type, strategic set and payoffs are common knowledge.

Game 1: Classical Ultimatum Game (no punishment is allowed).

The game between Proposer and Responder has nine different outcomes according to their moral types. Each outcome will result from a unique perfect equilibrium, whose payoffs are summarized in Table 1. Important results emerge from its analysis. Independently of the morality of his opponent, Proposer's monetary payoffs will tend to decrease the stronger his normative response, while Responder's payoffs will tend to increase. *This results from a stronger willingness to forego unfair opportunities and from a stronger reluctance to accept unfair offers.*

Game 2: Ultimatum Game with Costly Punishment.

We consider now situations in which Responder may impose a costly punishment if Proposer is unfair. We address the question of how much punishment Responder will demand.

Suppose punishment is discrete and that each unit of punishment costs one cent and consists in withdrawing δ cents from Proposer's payoff. Clearly, δ is a measure of Responder's punishment power. Let x be Responder's demand for punishment. The distributive gap and utility functions may be respecified as follows:

$$\begin{aligned} T(S_P, S_R, x) &= (S_P - \delta x) - (S_R - x) \\ U_{P,i} &= (S_P - \delta x) - D_i(T), \quad i = A, B, C \\ U_{R,j} &= (S_R - x) - D_j(T), \quad j = A, B, C \end{aligned}$$

while the rest of the model remains as in Game 1.

In Game 2, Proposer makes an offer, and Responder determines whether to reject the offer or to accept and demand a punishment. The game may be modeled as a Stackelberg game with Proposer as leader. To describe its solutions, we must first make several definitions, together with some comments:

Definition 1: Let $x_{R,j}^{**} = x_{R,j}^{**}(S_R, \delta)$, $j = A, B, C$, be the **Optimal Punishment**, i.e., the solution to Responder's problem:

$$\begin{aligned} \text{Max}_x \quad U_{R,j}(S_R, \delta, x) &= (S_R - x) - D_j((1 - S_R) - \delta x - (S_R - x)) \\ \text{s.t.} \quad U_{R,j} &\geq 0, \quad j = A, B, C. \end{aligned}$$

A necessary (but not sufficient) condition for $x_{R,j}^{**}(S_R, \delta) > 0$, $j = A, B$ is $T > 0$, since punishing if $T \leq 0$ will both reduce income and increase dissonance. If Responder is opportunistic she will never punish an unfair Proposer since her willingness to punish will be nil.

Definition 2: Let Responder's **Participation Share** be the function $S_{R,j}^P = S_{R,j}^P(\delta)$ defined by

$$U_{R,j}(S_{R,j}^P(\delta), \delta, x_{R,j}^*(S_{R,j}^P(\delta), \delta)) = 0.$$

For every δ , Proposer's offer should exceed the corresponding Participation Share. Otherwise, Responder will reject the offer.

Definition 3: Let Responder's **Critical Share** be the function $S_{R,j}^C = S_{R,j}^C(\delta)$ defined by

$$x_{R,j}^* (S_{R,j}^C(\delta), \delta) = 0.$$

Responder will punish those offers that she accepts and that lie below the critical share.

Definition 4: Let the **Critical Punishment Power** $\delta_{R,j}^C$ be the solution of the equation:

$$S_{R,j}^P(\delta) = S_{R,j}^C(\delta)$$

Responders with $\delta < \delta_{R,j}^C$ will not demand punishment and will thus behave as in a Traditional Ultimatum Game (Model 1). It may be proved that $\delta_{R,j}^C > 1$ for all types of morality.

Figure 1 shows the Critical Punishment Power, and the Critical Share and Participation Share functions for Responder if she has morality of type A or B in the (S_R, δ) cartesian space. Shaded areas represent the regions for which Responder will demand a positive punishment. As could be expected, Responder will begin to punish unfair proposals at lower punishment powers δ if her moral response is stronger ($\delta_{R,A}^C = 1.51 < \delta_{R,B}^C = 2$). Also, $x_{R,A}^{**}$ will correspond to an internal solution only if $\delta_{R,A}^C < \delta \leq 5/3$, that is, if the Critical Share function is in its increasing section. In this interval, a low punishment power makes it too costly for Responder to reduce T to zero, so even though she is morally strong she will deviate from her norm. However, if δ exceeds 5/3, a boundary solution $x_{R,A}^{**}$ will satisfy $T = 0$. Meanwhile, $x_{R,B}^{**}$ will be an internal solution for all $\delta \geq 2$. That is, if Responder has a morality of type B she will never undergo the necessary sacrifices to build up a fair situation³. An important point to notice is that the Participation Share function decreases with δ , and reaches values below the corresponding participation shares of Game 1. *This means that Responder will be not only willing to pay a cost for punishing an unfair offer (the third behavior described by Thaler and Camerer) but will accept otherwise unacceptable offers to do so.* This important corollary is susceptible of empirical verification.

We may now describe the perfect equilibria of Game 2. They result from the combination of the following optimal strategies for each type of player (the proof is left to the reader).

Responder's Optimal Strategies

Responder has type A morality: For every δ , reject offers lower than $S_{R,A}^P(\delta)$. For $\delta \geq \delta_{R,A}^C$, accept and demand a punishment equal to $x_{R,A}^{**}(S_R, \delta)$ if the offer lies in the range $S_{R,A}^P(\delta) \leq S_R < S_{R,A}^C(\delta)$. If the offer exceeds both $S_{R,A}^P(\delta)$ and $S_{R,A}^C(\delta)$, accept without punishment.

Responder has type B morality: For every δ , reject offers lower than $S_{R,B}^P(\delta)$. For $\delta \geq \delta_{R,B}^C$, accept and demand a punishment equal to $x_{R,B}^{**}(S_R, \delta)$ if the offer lies in the

³We specified the dissonance function with the purpose of highlighting this important possibility.

range $S_{R,B}^P(\delta) \leq S_R < S_{R,B}^C(\delta)$. If the offer exceeds both $S_{R,B}^P(\delta)$ and $S_{R,B}^C(\delta)$, accept without punishment.

Responder has type C morality: Accept any offer $S_R \geq 0$.

Proposer's Optimal Strategies

Proposer has type A morality: For every δ , make fair offers ($S_R = 0.5$).

Proposer has type B morality: If Responder has a morality $j = A$ or B , for every $\delta \leq \delta_{R,j}^C$, behave as in Game 1, and for every $\delta \geq \delta_{R,j}^C$, offer the maximum between the payoff solution in Game 1 and the Critical Share, $S_{R,j}^C(\delta)$. If Responder has a type C morality, behave as in Game 1.

Proposer has type C morality: Behave as if having a type B morality.

Given a combination of players (Proposer with morality $i = A, B$ or C and Responder with morality $j = A, B$ or C) and a value of δ , these strategies will render a unique perfect equilibrium corresponding to the solution of Game 2. The payoff solution, $S_{R,j}^{i**}(\delta)$, corresponding to this equilibrium will be:

$$S_{R,j}^{i**}(\delta) = \text{Max} [S_{R,j}^{i*}, S_{R,j}^C(\delta)]$$

where $S_{R,j}^{i*}$ corresponds to the equilibrium payoff in Game 1 when Proposer and Responder have moral types i and j respectively. (Recall $S_{P,j}^i = 1 - S_{R,j}^i$.)

We may now give an explanation to the third empirical behavior observed by Camerer and Thaler, i.e., *that Proposer may take advantage of information asymmetries to increase his share*. This results directly from the payoff solution, since by definition the Critical Share function, $S_{R,j}^C(\delta)$, will depend on the Optimal Punishment $x_{R,j}^*$, which is a function of the share Responder *believes* she is receiving. If her interpretation is incorrect, her Critical Share function will shift, potentially changing the equilibrium payoffs in favor of Proposer. This may happen, however, only if Proposer is morally deficient. If Proposer's morality is type A, he will take no advantage of information asymmetries. In this sense, ultimatum game in asymmetric conditions may function as a test of the moral strength of economic agents.

III. LABOR REGIMES AND MORAL RESPONSE

We will now construct a static theory of the choice of labor regimes in the firm using a principal-agent model in which the agent reasons according to the normative and psychological principles discussed in Section II but the firm behaves typically as a profit maximizer (which by now must be considered a strong simplifying assumption). We will consider a firm in which the joint venture of labor and capital generates gains of cooperation in which the relative contribution of each party is not well defined, and analyze the problem of their distribution.

Before fully going into the model, we must consider a set of simplifying assumptions. In modern industrial societies, formal contracts and organized markets constitute important coordination devices that usually establish the rules and order of economic interaction, including the spacing and timing of action and the horizons of decision making. Their explicit character allows them to function as formal frameworks in which the operation of normative behavior may become acceptable. A large part of human

action, however, is potentially unobservable or noncontractible. Therefore, if anything, contracts will be imperfect coordinatory devices. Their effectiveness will depend on the flow of information and trust established in the long-run by the contractual parties. Therefore, given a particular contractual structure (e.g., a fixed wage with a standard rule of labor), we should expect the coordination problems of a firm to depend on the quality of capital-labor relationships, and therefore, on the regimes of cooperation established by the firm. For example, a collaborative "superefficient" regime will generate a high quality flow of communication between capital and labor that will attenuate coordination failures and reduce their costs. In the following model, we shall assume these costs to be zero. This is a strong assumption, since some coordination problems may be irreducible independently of the quality of information (Rasmussen, 1989). Also, we will assume common knowledge of justice and reciprocity rules governing the workers' labor response, so there will be no costs for the firm for exploring the normative motivations of the workers. (It would be more realistic to assume the costs of exploration to be strictly positive and negatively correlated with the normative quality of cooperation.) These assumptions rule out important sources of inefficiency present in all kinds of labor regimes, and their removal would lead to some qualification of the major results of our model. However, they will enable us to simplify our formal analysis, concentrate on the causes of the problem of cooperation, and understand the logic of normative judgments and its distributive and organizational consequences.

1. The Model

Consider a principal-agent model in which the firm plays a Stackelberg game with the workers, who we assume are all alike. Labor and capital are inputs of a C^2 increasing concave production function $F(K,L)$. The firm offers each worker a contract (w,L_m) , where w , the wage rate, is a complex index measuring the overall benefits and quality of treatment provided by the firm to the worker, and L_m is the working standard, in units of "effective labor", formally required by the firm. The worker, however, will work L effective hours. Let r be the capital rate of return, about which the firm is assumed to be a price taker. The profits of the firm in the absence of supervision are:

$$\Pi(L_m, w, K; L) = F(K, L) - wL_m - rK. \quad (1)$$

Let $C = C(L)$ represent the monetary equivalent of the utility cost of working L hours for the worker ($C' > 0$, $C'' > 0$). The worker's principle of distributive justice is based on considering the distributive gap:

$$T(L_m, w, K; L) = ((1 - \alpha)/\alpha)\Pi(L_m, w, K; L) - (wL_m - C(L) - T_0). \quad (2)$$

α is a proportionality constant representing the share of the total gains of cooperation workers believe should correspond to the firm and $T_0 \geq 0$ is the excess utility $wL_m - C(L)$ the worker considers is fair to obtain when profits are equal to zero. It may also be interpreted as the level of income the worker needs to reproduce satisfactorily the way of life of his social group under particular historical conditions, or as a fixed cost of labor. It is not the reservation income, which we set at zero. The worker's principle of distributive justice is the following normative

Proposition 1: " T should equal 0."

This principle, given the contract (w, L_m) offered by the firm and its capital K , defines a fair level of work $\Lambda(L_m, w, K)$ according to

$$T(Lm, w, K; \Lambda(Lm, w, K)) = 0. \quad (3)$$

As in the model of ultimatum games, we shall assume that ethical values are relevant⁴, so the worker's behavioral norm should therefore be

Proposition 2: "L should equal $\Lambda(Lm, w, K)$."

Normative incongruence, or dissonance, will be a function of T, the worker's measure of injustice, as follows:

$$D(T) = d_0(T) \text{ if } T \geq 0, \quad D(T) = d_1(-T) \text{ if } T \leq 0. \quad (4)$$

where $d_0(0) = d_1(0) = 0$, and $d_0', d_1', d_0'', d_1'' > 0$. Dissonance is assumed to be a component of the utility of the worker. In the absence of external restrictions (such as supervision and threats of discharge) which might impose additional costs on the free and responsible actions of the worker, her utility function is:

$$U = wLm - C(L) - D(T) \quad (5)$$

Thus normative reasoning leads the worker from a universal principle (Proposition 1) to a behavioral norm (Proposition 2) dependent on the context (w, Lm, K) by means of an attribution function T which also includes her actions L. Action may not conform with the behavioral norm, but only at the cost of suffering dissonance. We say that behavioral norms are relevant if U attains its maximum value at $L = \Lambda(Lm, w, K)$. If they are not we say the workers are morally deficient: $L < \Lambda(Lm, w, K)$. We shall find that moral deficiency corresponds to $d_1'(0) < \alpha$ (see Figure 1)⁵.

If the firm decides to offer a contract in which labor's unrestricted response would be $L < Lm$, in the usual economic terms, moral hazard will appear, and conventional methods of control such as supervision will be invoked to maintain the labor standards. In these cases the firm will set up an efficiency wage system in which the (expected) utility function of the worker is specified as follows:

$$EU(Lm, w, K, S; L) = wLm - C(L) - D(T) - \Phi(S, \delta) \quad (6)$$

where $\delta = Lm - L$ represents the deviation of labor from the labor standard, S represents the supervising power of the firm costing it $X(S)$ (with $X(0) = 0, X' > 0$), and Φ represents the expected utility cost for the worker of deviating δ . We assume $\Phi(S, \delta) = 0$ if S or $\delta \leq 0$, while $\Phi_\delta > 0, \Phi_S > 0, \Phi_{\delta\delta} > 0$ and $\Phi_{S\delta}(S, 0) > 0$ for $S, \delta \geq 0$. We suppose for simplicity the additional, but natural, restriction that supervision should be enough to force the workers to comply with the working standard, i.e., that $L \geq Lm$.

The firm's problem is therefore to maximize profit P with respect to Lm, w, and K subject to the restriction of the worker's labor response and $L \geq Lm$, as follows:

⁴Violations to the relevance of ethical values may appear because of the complexity of normative judgment applied to particular situations (Burgoyne, et al, 1993). Also, self-deception or self-multiplicity may constitute cases of belief incongruence in which this condition is violated.

⁵Clearly, individuals of Type B in the ultimatum models developed in Section II correspond to this type of moral behavior..

$$\begin{aligned} \text{Max}_{(Lm,w,K,S)} P(Lm,w,K,L,S) &= \Pi(Lm,w,K;L) - X(S) & (7) \\ \text{s.t.} \quad L &= L(Lm,w,K,S) \\ L &\geq Lm \end{aligned}$$

where

$$L(Lm,w,K,S) = \text{argmax}_L EU(Lm,w,K,S;L) \quad (8)$$

We define the net social product as

$$NP(L,K) = F(K,L) - C(L) - rK. \quad (9)$$

For simplicity of analysis, we shall assume $D(T)_{LL} > 0$ in the relevant regions. We have

$$\begin{aligned} D(T)_{LL} &= d_0'(T)((1-\alpha)/\alpha)F_{LL} + C''(L) + d_0''(T)((1-\alpha)/\alpha)F_L + C'(L)^2 & (T > 0) & (10) \\ D(T)_{LL} &= -d_1'(-T)((1-\alpha)/\alpha)F_{LL} + C''(L) + d_1''(-T)((1-\alpha)/\alpha)F_L + C'(L)^2 & (T < 0) \end{aligned}$$

so each expression has only one negative term. This assumption excludes the possibility of multiple equilibria for each regime type.

Theorem. There are five types of labor regimes with the following characteristics.

A. Regimes with morally sound workers ($d_1'(0) \geq \alpha$; see Figure 2 A):

(i) Collaborative Superefficient Regime. $S = T = 0$. The values Lm^* , w^* , K^* , L^* which can satisfy this equilibrium are unique. The first order conditions for profit maximization is

$$\begin{aligned} F_L(L^*, K^*) &= C'(L^*) & (11) \\ F_K(L^*, K^*) &= r \end{aligned}$$

corresponding to an efficient allocation of resources. We also have

$$L^* = \Lambda(Lm^*, w^*, K^*) \quad (12)$$

These conditions and the resulting income distribution also maximize the utility of the workers and the net social product NP. Distribution is realized according to the principle of fair income distribution adopted by workers: if NP^* is the maximum net social product,

$$\begin{aligned} \Pi(L^*, K^*) &= \alpha(NP^* - T_0) & (13) \\ w^*Lm - C(L^*) &= T_0 + (1 - \alpha)(NP^* - T_0) \end{aligned}$$

(ii) Exploitative "efficiency wage" regime. $S, T > 0$. Let $Lm^\#, w^\#, K^\#, L^\#$ be values satisfying this equilibrium. They are unique if $d_0(T)_{LL} > 0$. Then

$$L^\# = Lm^\# \quad (14)$$

There is a unique function $S^R(Lm,w,K)$ satisfying $S^R_{Lm} > 0$ and $S^R_w < 0$ for which

$$L(w,K,S^R(Lm,w,K)) = Lm. \quad (15)$$

The first order conditions can be written in the forms

$$\begin{aligned} F_L(K^\#, Lm^\#) &= w^\# + X'SR_{Lm} \\ Lm^\# &= -X'SR_w \\ F_K(K^\#, Lm^\#) &= r + X'SR_K \end{aligned} \quad (16)$$

or, alternatively,

$$\begin{aligned} Lm^\# &= -\alpha TR_w \\ F_L(K^\#, Lm^\#) &= C'(Lm) - TR_{Lm} + (1/\alpha)X'SR_{Lm} \\ TR_K &= (1 - \alpha)SR_K \end{aligned} \quad (17)$$

At this equilibrium workers work more than they consider fair and suffer dissonance.

$$L^\# > \Lambda(Lm^\#, w^\#, K^\#) \quad \text{and} \quad D(T) > 0. \quad (18)$$

There is an unfair transfer of value $\alpha T^\#$ for which the firm pays $X(S^\#)$, as can be read in

$$P^\# = \alpha(NP^\# - T_0) + \alpha T^\# - X(S^\#) \quad (19)$$

$$w^\#Lm - C(Lm^\#) = T_0 + (1 - \alpha)(NP^\# - T_0) - \alpha T^\#. \quad (20)$$

Equations (16) show this equilibrium is inefficient. Labor will be overemployed (underemployed) if in equilibrium the marginal transfer T the firm is able to obtain is greater (smaller) than the marginal cost of supervision X . Capital is misallocated whenever F_{LK} is non-zero (as for a Cobb-Douglas). Let $NP^\#$ be the net social product at this equilibrium. Generically, labor and capital are misallocated so

$$NP^\# < NP^*. \quad (21)$$

B. Regimes with morally deficient workers ($d_1'(0) < \alpha$; see Figure 2 B):

(iii) Deficient Collaborative Equilibrium, $S = 0$, $T < 0$. This equilibrium is analogous to the superefficient equilibrium, except that the labor response $L^I (< \Lambda)$ is deficient, with $T < 0$. Labor response is governed by $d_1'(-T)T_L = C'$, which may be written in the form

$$F_L = \frac{1 - d_1'(-T)}{\frac{1 - \alpha}{d_1'(-T)}} C'(L) > C'(L) \quad (22)$$

Thus the workers' moral deficiency precludes an efficient allocation of labor. The same equation will hold once profit is maximized by the firm. Nevertheless, the situation may be economically viable and lead to increasing collaboration, since the workers' incongruent labor response L^I will increase with $W = wLm$ according to:

$$L_W^I = \frac{d_1''(-T)T_L}{\alpha d_1''(-T)T_L^2 + \alpha(1 - d_1'(-T))C''(L) - (1 - \alpha)d_1'(-T)F_{LL}} \quad (23)$$

In spite of the workers' moral deficiency, their moral potential may be used to increase their labor response. The profit maximization conditions will be:

$$F_K = r, F_L = 1/L^1 w. \quad (24)$$

(iv) Corrective efficiency wage regime, $S > 0, T \leq 0$ (the case modelled by "efficiency wage" theoreticians) and

(v) Exploitative efficiency wage regime, $S, T > 0$.

These equilibria are described by the same equations as case (ii), except for the following modifications. d_0 is replaced by D , and in the case $T \leq 0, L^1 \leq L^\# = L_m^\# \leq \Lambda$, while in the case $T > 0, L^\# = L_m^\# > \Lambda$. The level of supervision S^R required to obtain this response (and therefore the cost of supervision) is an increasing function of L_m with a jump at $L_m = \Lambda$ if the level of dissonance has a pointed minimum at Λ . Thus at $T = 0$ we consider $D(T) = d_1(-T)$.

Proof: (see Appendix 1.)

From Theorem 1 we may obtain the conditions for the firm's choice of the labor regime which maximizes profits. Let the efficiency loss be:

$$E^\#(L_m, w, K) = NP^* - NP^\#(L_m, w, K) > 0$$

We may write

$$P^\# = \alpha\{NP^\# + T^\# - T_0\} - X(S^R) \\ P^* = \Pi^* = \alpha\{NP^* - T_0\}$$

Clearly, the firm will choose an "efficiency wage" regime over a "superefficient collaborative" regime if $P^\# > P^*$, or equivalently, if:

$$T^\# > E^\# + (1/\alpha)X(S^R) \quad (35)$$

i.e., if the firm has the power to force an optimal distributive gap which exceeds in equilibrium the total loss in efficiency plus supervision costs. Otherwise, the firms will prefer to construct "collaborative" regimes and avoid conflictive exploitation. In perfect competition (where profits tend to zero) equation (35) will translate into the capacity of conflictive regimes to reduce prices and out-compete collaborative firms.

(c) Combining Regimes in Labor Stratification to Reduce Costs

Inequality (35) relates two central issues of classical economics: exploitation and supervision, both potentially present in the "efficiency wage" regime. Clearly, a determinant element of the firm's choice of regime is the cost of supervision in equilibrium. How can the firm reduce this cost and increase the potential profits of an efficiency wage regime? Traditionally, the answer to this question involves answering another related question: who will supervise the supervisors? Or alternatively, how can the firm maximize the efficiency of supervision?

Usually, economists analyze this as a problem of enforcement in a community of opportunistic agents. As such, it has recently received considerable theoretical attention. Solutions have stressed the importance of reputation build-up in infinitely repeated games where trading partners don't vary, or (more interestingly) of minimal and decentralized

information transmission when encounters between agents are casuistic and short-lived (Fudenberg & Maskin, 1986; Okuno-Fujiwara & Postlewaite, 1989; Rubinstein & Wolinski, 1990; Kandori, 1992). Evolutionary game theory has also been applied to bring out potential solutions to the problem (Axelrod, 1980; Coleman, 1990). Almost two hundred years ago the same problem inspired Bentham's Panopticon, a glass building in which a manager situated at the top could control the performance of everybody in the building through a hierarchy of supervisors, the ones in the higher floors observing the performance of those in the lower until the workers were reached.

Bentham solution required the owner to be the top and only self-supervised supervisor. Most firms rely, however, on a different solution, which Weber (1987) called the "authority's administrative team". Our model explains the existence and function of such a team. Firms may segment the working community by inducing the formation of a group of workers loyal to the firm (i.e., who are willing to enforce the firm's rules), the supervisors, with whom harmonious cooperation, and therefore efficiency, is established and whose norms of distribution differ from those of the mass of workers. Therefore, the problem of having dissonant supervisors supervise dissonant workers, compounding moral hazard, will disappear. Several elements may intervene in the formation of the authority's administrative team. One usually used by firms is the design of wage policies in which supervisors receive benefits above their job reward claims while other workers are treated below their reference norms. The segmentation process may be facilitated by the existence of spatial, occupational and status barriers which separate supervisors from other workers of the firm (Brown, 1980; McNabb & Ryan, 1990). This profit maximization practice, however, has serious social consequences, since it generates an economic mechanism partitioning social life in the working place, which induces solidarity breakdown, builds up normative conflicts and confusion, and creates formidable long-lasting barriers to communication. Using marxian terminology, the firm's attempts to construct an exploitative infrastructure generate a highly conflictive superstructure.

IV. DEVELOPMENT OF NORMATIVE REASONING AND ADULT OPPORTUNISM AND CONVENTIONALISM

We have explored some economic consequences of an agency model that introduces norms into economic analysis by considering in a non-trivial way the capacity of people to make complex moral judgments. This agency model generates endogenous changes in the agent's revealed preferences as a function of their moral judgment of the context in which they act. From a formal perspective, the model captures as special cases two extreme models of morality: opportunism and conventionalism⁶. Opportunistic behavior results from setting dissonance equal to zero for all T . Conventionalism, on the other hand, corresponds to a dissonance that is zero for $T=0$ and infinite for all $T \neq 0$. Intermediate cases correspond to situations in which individuals may deviate, given sufficiently strong rewards or punishments, from their behavioral norms. The models we have developed in this paper show that dissonance need not be infinite to attain moral consistency in everyday situations, but a low dissonance response respect to external incentives may lead individuals to deviate from their own beliefs, a situation we have characterized as moral deficiency. Such deficiency, although sharing some of the characteristics of opportunism, will differ from it in that it will have some degree of moral motivation, leading agents to respond positively to superefficient management practices and to be willing to punish at a cost in ultimatum games.

⁶ Elster (1989) discusses opportunism and conventionalism as the two main ways of visualizing the role of norms in economic life. Clearly, our perspective englobes these possibilities and many others.

In our model individuals are unable to change their principles, attribution or dissonance functions at will. Underlying this assumption is a psychological theory in which these elements constitute the moral part of human identity, which develops during a complex process of individual ontogenesis, itself situated in the history of the social community. In other words, in this theory normative reasoning and moral emotivity are constituent elements of the self, which evolves through different moral moments as individuals become more capable of handling different normative elements, and their capacity for making normative judgments and avoiding self-deception improves (Piaget, 1983; Wadsworth, 1989). We will now discuss in a simplified way one particular version of such theory, due to Tapp, Gunnar & Keating (1983). Our purpose is to set the basis for an ontological interpretation of opportunism and conventionalism in adult individuals that is consistent with our knowledge of human moral psychology and how it develops, as well as to explore the psychological elements that characterize adult morality and explain why and how they cause moral deficiency.

1.- Stages of Morality

Tapp, Gunnar & Keating have proposed three developmental stages of normative reasoning, which they called Pre-conventional, Conventional and Post-conventional. **Pre-conventionality** dominates moral behavior during early childhood (0-5 years). Small children cannot understand the role of altruism, trust, promises and commitment in giving consistency to human self and social life (Stigliano, 1993). They have not internalized social norms and even less understand second order principles of human moral interaction and their normative consequences. Therefore, they are incapable of conducting normative judgment. Not having moral judgment as a constituent element of individual self, hedonism and opportunism governs their social interaction, and conformity to norms is based on an acute sense of their vulnerability respect to external consequences and authority decisions. In advanced phases of the pre-conventional stage, children begin to rationalize the importance of social norms for others, and use them to manipulate external situations purely in the pursuit of self-interest. Exchanges with other individuals are governed by egocentric notions of exact reward or punishment, without regard to context.

During late childhood and pre-adolescence, individuals enter the **conventional stage** when their capacity for normative judgment begins to develop, but is still very imperfect. During the first phase of the conventional stage, individuals begin to develop more consistent altruistic behavior and apprehend the desirability of some socially accepted rules of behavior that provide reference for action, but their commitment to those rules still depends on external moral authority and social (usually familial) approval. In later phases of the conventional stage, however, individuals fully internalize the importance of social norms in everyday life, so hedonism is repressed and external enforcement becomes secondary compared to internal mechanisms of conformation. Conventional individuals, however, still cannot apprehend more general and abstract principles of behavior, nor can they construct normative responses to their context. Hence, their legal structure is conformed by rigid family and social rules and conventions, to which they stick under the conception that this is the only way to maintain an ordered life and reduce uncertainty (for example, justice is still determined through majority rule and fairness means the impartial application of law).

During adolescence, the capacity for normative judgment begins to fully develop. Young individuals discover that social norms are imperfect constructions, which reflect group expectation and consensus but may contradict more general normative dictates they slowly and conflictively begin to discover to be the true fundamentals of effective social interaction in their own culture. The "discovery" of universal values determines the beginning of **post-conventional normative reasoning**. We have discussed its basic elements in Section II. At this stage, normative judgement has as premises universal values that lead to adaptable rules of behavior to which individuals should commit. The need for cognitive and emotional congruence will provide the basic force for such

commitment. Moral dissonance, however, will depend on individual psychological traits, and other psychological forces may outcompete moral forces in the formation of choice, taking individuals to violate their own behavioral norms. In such cases, the accumulation of dissonance will have psychological consequences; individuals may suffer from guilt, self-depreciation, anger, identity crisis and depression.

2.- Opportunism and conventionalism in adult individuals

Thinking in terms of stages of morality may be somewhat misleading, since the development of individual morality - as is the development of individuality itself - is a never-ending process of discovery and practice, which evolves in multidimensional and interactionist patterns that are far from being linear, unidirectional or clearly partitioned. In most adult individuals post-conventional reasoning dominates morality; however, most of us have areas of normative reasoning in which opportunism or conventionalism is strong. Tapp, Gunnar & Keating's theory suggests that we should analyze these behaviors in terms of three basic psychological components: (i) the meaning of social norms and moral values, (ii) the capacity to conduct moral judgment, and (iii) the reactivity to moral incongruence.

In the models developed in this paper we have identified opportunism with the lack of reactivity to moral incongruence during social interaction. Clearly, there are many situations in which individuals may have internalized moral references but lack the emotional strength to support them (i.e., individuals will be morally deficient). Only the most extreme cases, however, will lead to opportunism, usually as a symptom of some form of defective development of the self. Some of its causes may be psychological fixation or regression, compulsive obsession with external objects or persons, decreased self-esteem and depression.

Following Tapp's et. al. analysis, the concept of opportunism may now be expanded to include any form of radical impairment in the conduction of moral judgment. Particularly important seems to be the lack of moral references. Moral judgment will not occur in those areas of social interaction where individuals have not internalized moral principles. In this case, moral incongruence will be undefined and therefore emotionally irrelevant, having the same behavioral consequences as a full lack of reactivity.

Lack of moral definition may seem to be a more common consequence of social life than the loss of emotional reactivity. After all, in complex societies the life histories and specific moral dilemmas individuals confront during their social lives, on which the meaning and compelling strength of moral values depend, will vary with gender, social status, economic position and cultural background (Weinberg, et al, 1993; Sipiora, 1993; Berninger & Yates, 1993). With this normative background, we could expect communication and cooperation failure to pervade community life. However, even if group ethical definitions and interests decisively influence the outcome of social interaction, ultimately the interests of society as a whole will be safeguarded, to a greater or smaller extent, by most groups and classes comprising the social corpse (Polanyi, 1975). (In modern society, members of many, if not all, social groups and classes have come to sense the dangers involved in the exhaustion of the physical and psychological strength of workers, women and social minorities, the destruction of family and neighborhood life, the devastation of cultural diversity, the deterioration of craft standards, the disruption of ecosystems, the pollution of soil and water, the loss of biodiversity, etc.) Consequently, in any single society there will evolve higher order values and supportive institutions of very general application regulating group interaction in community life. Principles of distribution, status and reciprocity belong to this category. Excluding historical moments of maximum social conflict and unrest, in which basic community ties may break causing social dislocation of stupendous proportions, these principles will preclude differences in moral culture from becoming causes of full opportunistic responses of some individuals or groups respect to others.

Hence, opportunism represents an extreme case not only from a theoretical but also from a psychological and historical perspective. Some authors of communitarian tradition argue that, from the normative perspective, opportunism could be interpreted also as an extreme case of myopia and self-delusion (Max Neef, 1986; Chapela, 1995). Most economists would recognize adult opportunism to be different from pre-conventional reasoning children in that individuals will have a much more subtle and full understanding of the importance of values and norms for other individuals, and may use them more effectively as rhetorical instruments for their own "self-interest" (Williamson, 1985). To the extent, however, that in complex societies morality may function as an important component of satisfaction of the deepest individual and social needs (e.g., identification and belonging), the opportunistic use of values and norms may be self-delusive and only serve to feed a continual onrush of superficial appetites.

The other extreme case of morality, conventionalism, is usually a consequence of another kind of impairment in moral judgment, i.e., the irreflexible and rigid use of social norms as reference for action. It will occur when individuals cannot apprehend the more general and abstract principles of morality and become incapable of adapting their normative responses to the context. All individuals have a tendency towards conventionalism, as a consequence of the feelings of uncertainty, insecurity and anxiety that deviating from group expectation and consensus provokes. However, full conventionalism will only appear if these feelings dominate the individuals' psychology, since then they will repress the discovery of the imperfections and contradictions of social norms, rationalizing instead rigid family and social rules and conventions. Victor Hugo, in *Les Misérables*, gives us a dramatic example of the consequences of this behavior. Inspector Javert, who during his whole life pursued the strict application of the law against criminals, commits suicide when he finally envisions the possibility of a contradiction between social norms and the higher principles of humanitarianism and mercy.

In summary, adult opportunism and conventionalism represent realistic but extremely defective cases of individual development, characterized by impairment of moral judgment or emotional reactivity. A general analysis of social and economic interaction should therefore avoid departing from them as paradigmatic models of human behavior⁷. Instead, the general case will correspond to situations in which individuals may deviate, if rewards or punishments are sufficiently strong with respect to dissonance, from the behavioral norms dictated by moral judgments based in higher order values. This has been the perspective adopted in this paper.

V. SOCIAL CAUSES OF MORAL DEFICIENCY IN WORKERS

This section exemplifies how social conditions may cause serious moral problems in the working place. We begin by exploring how extreme poverty may lead to low emotional reactivity, and then consider more complex situations affecting the relevance and structure of moral references. Social and economic instability may cause normative dislocation and lead to opportunistic behavior. Also, moral references may be subject to ideological manipulation, leading to moral deficiency. Finally, moral confusion may be a consequence of the irreducibility of conflicting principles of distribution and loyalty in the working place.

In each example, we discuss the long term effects of labor management. We have argued that superefficient practices reinforce the workers' individual and group identity, personal self-esteem, and willingness to obtain and share new knowledge, skills and training. Therefore, in a first analysis we could expect a deficient collaborative equilibrium to eventually evolve into a full collaborative equilibrium (since in the long run an increased personal self-esteem and social capacity would also increase moral strength). However, when examined more closely, such optimistic expectations will turn out to be far too simplistic. On the other hand, an "efficiency

⁷We should also avoid defining norms from a conventional perspective, such as in Kandori (1992): 'a desirable behavior together with sanction rules in a community.'

wage" regime, either corrective or exploitative, will become increasingly problematic. "Moral improvement" through corrective supervision will tend to nourish short-term performance at the cost of increasing the dependency of workers on external incentives and reducing their self-esteem (Kohn, 1993), while exploitative relations will have the kinds of long term effects described in the introduction of this paper.

(a) *Psychological impairment due to extreme poverty.*

In many rural areas of the developing world, extreme poverty cause physio-psychological impairment of workers and reduce to very low levels their self-esteem and normative reactivity. Therefore, workers' labor response does not correspond to that of socially functional individuals. Such conditions usually appear where rapid economic transformations dismantle the normative mechanisms of income redistribution (i.e., the moral economies) that traditionally functioned in moments of severe collective distress (Scott, 1985; Watts, 1984). A collaborative regime may partially substitute for such mechanisms, but will increase the capacity of coherent social functioning only if it increases and stabilizes income formation. Otherwise, a deficient collaborative equilibrium will not evolve into a full collaborative equilibrium. Corrective "efficiency wages", on the other hand, will not only reduce the workers' income (compared with a collaborative regime), but will worsen their labor response by undermining their already deteriorated self-esteem, and probably reduce their capacity to resist exploitation, leading to an exploitative regime.

(b) *Normative dislocation due to social instability.*

Situations of extreme poverty may be a consequence of the dislocation of traditional patterns of resource and income distribution due to rapid and imperfect economic modernization (Polanyi, 1974; Watts, 1984; García-Barríos, et al, 1990). Such extreme situations need not arise, however, for social dislocation to have profound effects on social morality.

In developing countries, workers often establish weak and unstable social and economic interactions with firms because of the instability of employment. In this case, values of fair distribution and procedures are unstable and usually ill defined, and the emotional bonding of reciprocity and community interaction established in the working place tends to be weak. Furthermore, in this situation the diffuse character of reciprocity handicaps its relevance to economic performance, since the chances of legitimately responding to gifts received in the past decrease as personal bonds become unstable.

Again, an "efficiency wage" regime may increase short-term productivity, and will automatically provide the formal framework for the operation of the firm, but will not help to solve the "community problem", which may be exacerbated by the increased competition and repeated exercises of power assertion that usually accompany the system. Normal superefficient management, however, may be ineffective or extremely costly due to the lack of clear normative structures and the presence of external destabilizing forces. A more general managerial organization, such as that proposed last century by Owen, may provide a sensible but costly solution to this problem, since the firm will have to invest in the stabilization of the workers' economic, social and ethical life.

(c) *Ideological dominance and moral insufficiency*

The previous discussion points out an important topic, that of the formation of normative structures and references (in our model α and T_0). While in our analysis these parameters are individual, they may become socialized to a standard of fairness the battles over which are clearly of historical importance. Many factors may be involved, including the level of ideological and political cohesion or fragmentation of workers, their forms of organization, the levels of national wealth, culture and education, etc. The firm may try to increase α and reduce T_0 by investing in these processes. For example, the firm may limit information on its profitability and on the wages of other workers. It may also try to

influence the informal organization of the workers to reduce the flow of information among them and disrupt leadership. Both workers and entrepreneurs may try to influence the various social agents that participate in the definition of social references and the way they are internalized by individuals, including the State, the media, cultural groups, primary groups, etc.

The ideological manipulation of the reference norms, however, has limitations. For example, a situation of extreme ideological dominance may induce the workers to internalize distributive standards that are too painful to accomplish. Consider situations in which α , the fair share corresponding to the firm according to the worker, is excessively high. Workers emotional reactivity may not suffice to generate the necessary commitment to maintain this belief, since $d_1'(0)$ might become less than α (see Equation 17), making the equilibrium labor response less than A (there will be moral hazard). Individuals in this situation, however, will remain dissonant and with a sensation of guilt, and they will "need an external push" (e.g., through an efficiency wage regime) to live up to the rational and moral standards they have set for themselves. However, this "solution" may accumulate in the individual feelings of external dependency, becoming a source of cognitive and emotional contradiction and neurosis.

(d) Irreducibility of conflicting principles of distribution.

An important source of cognitive and emotional contradiction for the workers in modern industrial societies is the existence of conflicting and incommensurable norms of distribution and loyalty to the firm (MacIntyre, 1985). Such situations arise when workers internalize rival normative arguments, each one logically valid, but which cannot be weighed against each other. We outline one such situation, in which what could appear as defective collaboration is the result of the workers holding conflicting norms. Suppose production in a capitalist society is characterized by Figures 4A or 4B as follows. The supervision curve U_1V_1 offers an equilibrium EQ_S with profits P_S . All individuals share the common belief that a transitional arrangement exists that may put society on the path to a new and more desirable economic situation, implying however a loss of potential profits for an uncertain number of periods⁸. This transitional arrangement is represented by the collaborative equilibrium EQ_1 in the curve of distributive justice A_1B_1 , characterized by a profit less than P_S and a net labor income W_1 . However let us also suppose that it is common knowledge that to establish the transitional arrangement a collective decision hindering short run competition needs to be taken by capitalists collectively, *as a class*, and that the institutional arrangements necessary to achieve such cooperation are impracticable⁹.

What will the workers' values of fairness look like *when working for a particular firm*, supposing they are rational and intelligent agents who know a superior social state could be constructed rendering higher levels of productivity and social welfare? When considering any particular firm, workers will recognize the economic difficulties of the collaborative equilibrium EQ_1 . In the absence of an institutional solution to the firms' cooperative problem, firms cannot keep to it individually in the presence of short run competition by other firms not keeping it. Therefore, workers do not hold firms individually responsible for the inferior state of affairs. They nevertheless consider them to share the collective responsibility for not supporting the necessary institutional changes. A situation of conflictive responsibility attribution will arise;

⁸ The assumption that all individuals (including capitalists) share the belief that such state is desirable and may be reached through a particular transitional phase is made for simplicity of analysis. We let the reader imagine the nature of the final "golden age" as they wish. However, we assume high wages as a precondition for initiating the transition. Historic evidence shows that workers' income should be high to obtain the critical mass of human capital and social organizational capabilities to achieve developmental sustainability (Pipitone, 1993).

⁹ The enforcement of such an institutional arrangement may be too costly, because of the relative moral weakness of capitalists confronting the possibility of bankruptcy in the face of the competition of (relatively morally weak) free riders (employing relatively morally weak workers), or because capitalists also confront normative conflict with such established norms as that price competition is fair, or that interfering with the market is counterproductive.

workers will arrive at two irreducible principles of fair distribution. First, the principle A_1B_1 mentioned above, which considers the individual firm's collective responsibility, and second, a more lenient principle A_2B_2 condoning this responsibility. We shall assume this second possibility offers a collaborative equilibrium EQ_2 with a profit level higher than P_S^{10} .

What will the workers do, holding incompatible norms of fair distribution? Consider the case of workers who are morally sound. Whatever action they take will result in dissonance from breaking one or the other norm, given that social conditions are such that the normative conflict is in practice insoluble to the workers. Following our psychological model, the workers will choose the actions that minimize their dissonance, now a weighted sum of the dissonances corresponding to each norm. These weightings could correspond in part to the ideological spectrum of the working class. Thus their response to contracts offered by the firm will be given by a curve RR' between A_1B_1 and A_2B_2 offering the firm collaboration at EQ_R .

This equilibrium will be chosen by any individual firm if we suppose that the profits it offers are greater than at EQ_S (Figure 4A). Suppose, however, that, given the state of competition, such a firm does not accept its collective responsibility (capitalists competing with each other may not accept their status as a class for itself), but considers that what is fair is A_2B_2 (which coincides with one of the workers' principles). It will appear to it that the workers are morally deficient and therefore offer EQ_R instead of EQ_2 (notice that EQ_R is inefficient and analogous to deficient collaboration). Also, since there is no reason to expect this equilibrium to evolve towards EQ_2 , the firm's superefficient efforts to enhance long-term productivity by creating an environment of good-will and trust in the working place will be frustrated by the 'serious attitude problem' of the workers. Clearly, the frustration may become in the long-run a source of miscomprehension, mistrust and conflict between workers and managers.

Exploitative equilibrium EQ_S will be chosen, on the other hand, if the weight given by the workers to the collective responsibility of the capitalist class is too large, causing the profits offered by EQ_R to be strongly reduced. In the eyes of workers, this paradoxical result will make capitalists the enemies both of their class and of progress. For capitalists, however, it will be a result of competition and the workers' stubborn idealism. Both groups will have reasons to support their beliefs. In effect, society will be unable to achieve the desired transitional arrangement.

VI CONCLUSIONS AND FINAL REMARKS

Most theorists of cooperation accept community structures and moral values as necessary to create the long term relationships required for repeated economic interaction and to make beliefs converge and provide focal points to restrict multiple potential outcomes during economic cooperation. However, still not many appreciate the full significance of ethics in economic life. This paper has explored the mechanism through which morality determines the formation of preferences of individuals involved in economic relationships. We have extended the theory of labor contracts to endogenize, in a single model, the states of information, efficiency, income distribution, justice attribution and reciprocity characterizing cooperation. We have shown that fair is efficient, because it clears up potential market and information failures and thus may generate a collaborative equilibria enhancing maximum global efficiency. Meanwhile, unfair distributive strategies may uncover such failures, reduce efficiency, increase moral suffering and ignite conflict. Most importantly, we have shown that even when it is deficient, moral judgement will constitute a source of collaborative response and increase efficiency.

For the last two centuries, many intellectuals and business managers have perceived the full importance of morality in economic life and shared the conviction that in capitalism there must be a just method to construct social relations capable of reaching the deeper layers of personality

¹⁰ Observe that we could write a set of logical propositions analogous to Propositions 1 and 2, formalizing the moral reasoning of the workers which we have described, including in its premises the current state of society.

to motivate human productivity and increase social welfare. Some of the theoretical results of this paper strongly reinforce this conviction. Section V, however, showed that such a method is plagued with difficulties arising from the nature of contemporary social and economic relations and institutions determining the outcome of profit maximization. Failure in the institutional and socio-psychological web supporting normativity will increase the relative profitability of exploitative social relations *vis a vis* collaborative ones. Workers' moral failure, for example, will not only produce inefficiency during collaboration, but will probably reduce the workers' capacity to resist undesirable or exploitative contractual arrangements due to the loss of individual self-esteem and organizational capacity (reducing, in our model, the costs of supervision). Other situations may have uncertain outcomes: we would expect strong principles of justice as those inducing conflictive normativity as that represented in Figure 4 A and 4B to increase the workers' capacity to resist exploitation, but also to reduce their willingness to establish collaborative relations with the firm.

These examples, and many others that may arise as extensions of our analysis, show that once the normative factors of economic relations are taken seriously, economic analysis and policy may become quite complex. Much multidisciplinary research will be necessary to clarify the important issues. However, from the results of this paper clearly such research may have considerable theoretical and practical importance.

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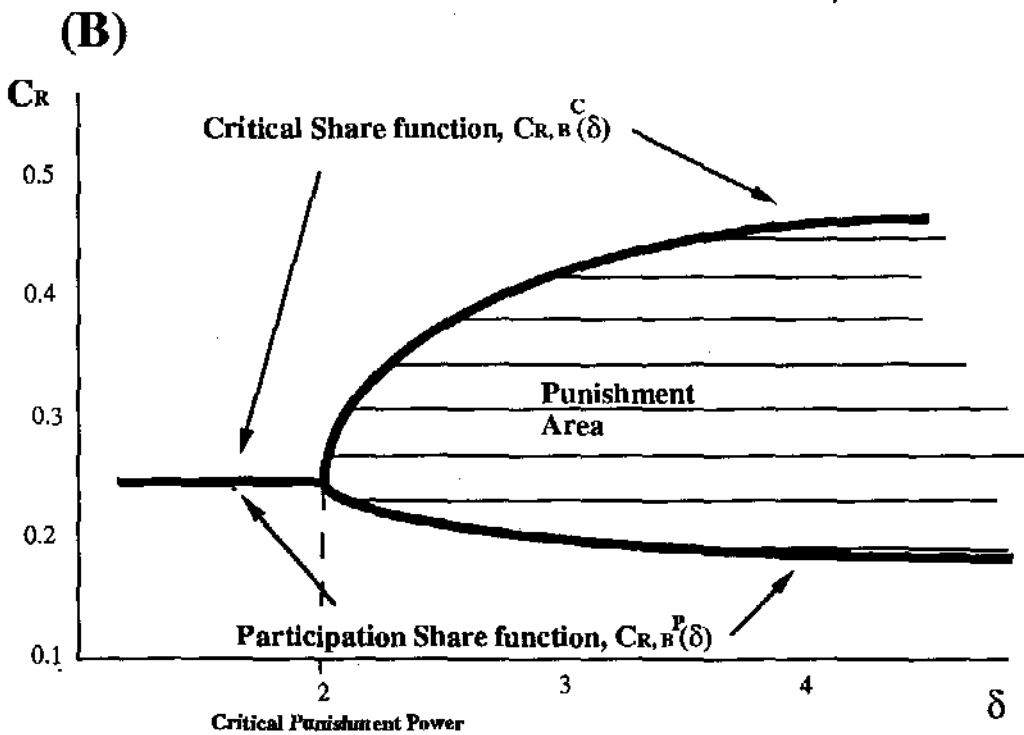
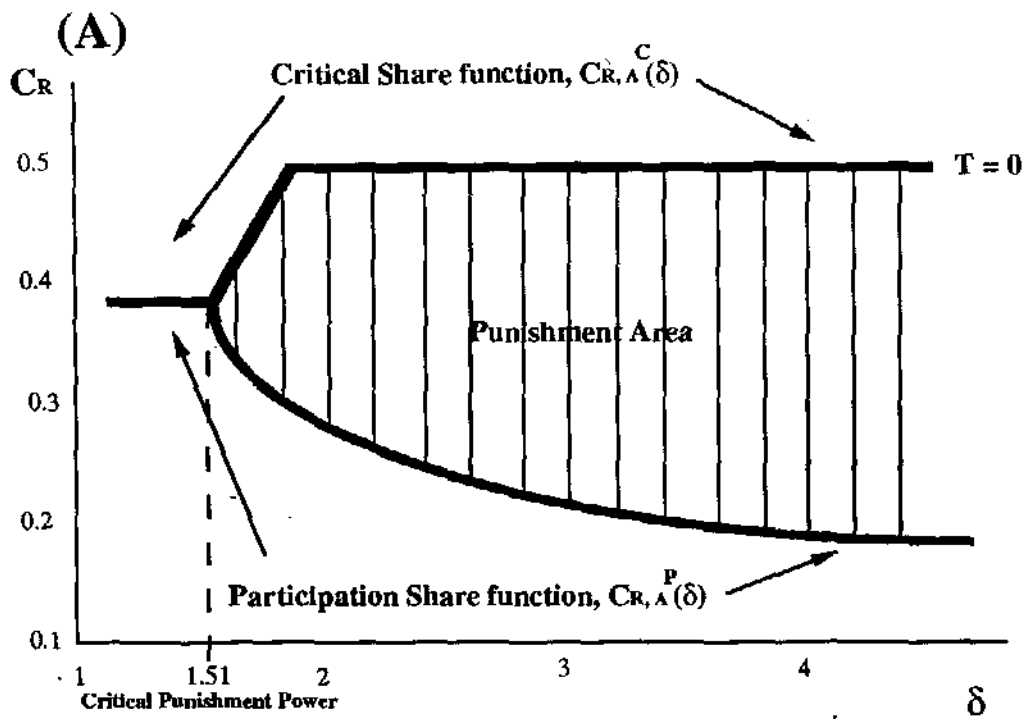


Figure 1. Responder's Critical Share and Participation Share functions, and Critical Punishment Power. (A) Responder of Type A, (B) Responder of Type B.

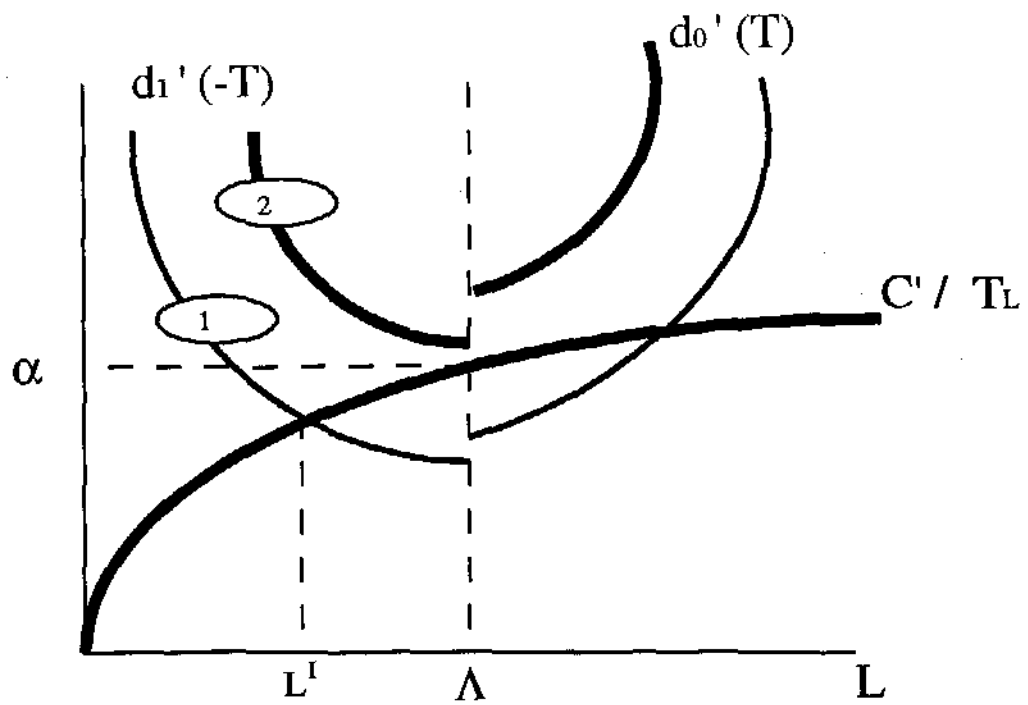


Figure 2. The labor response equilibrium is obtained when marginal dissonance in its decreasing section is equal to (Case 1) or greater than (Case 2) C'/T_L .

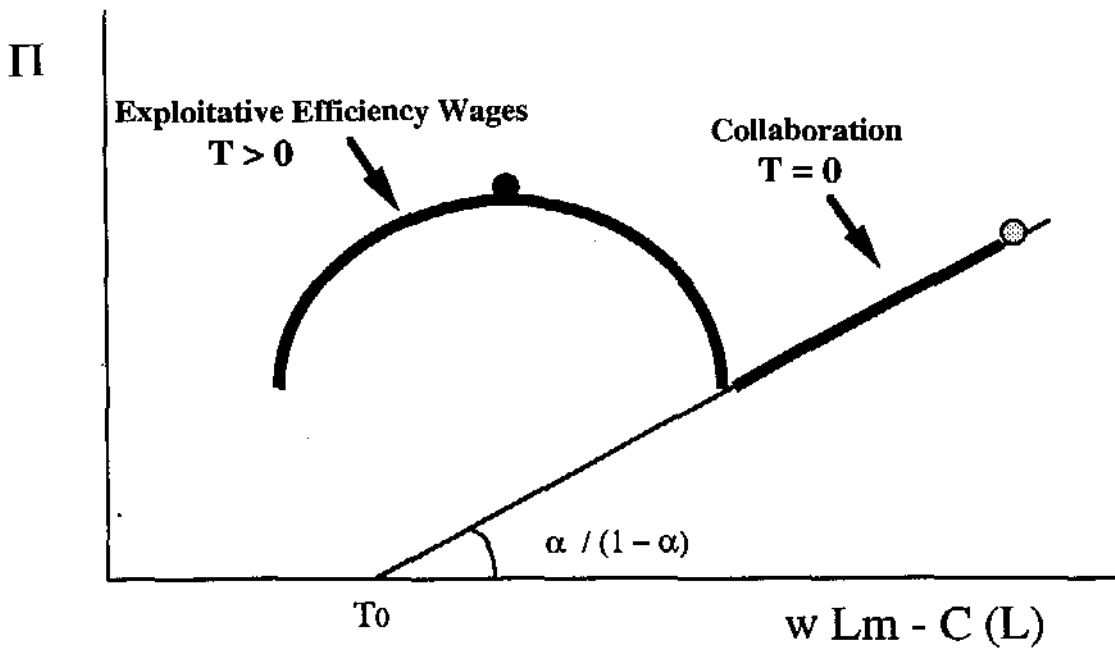


Figure 3A. Income distribution under alternative paths of profit maximization with non-shirking workers.

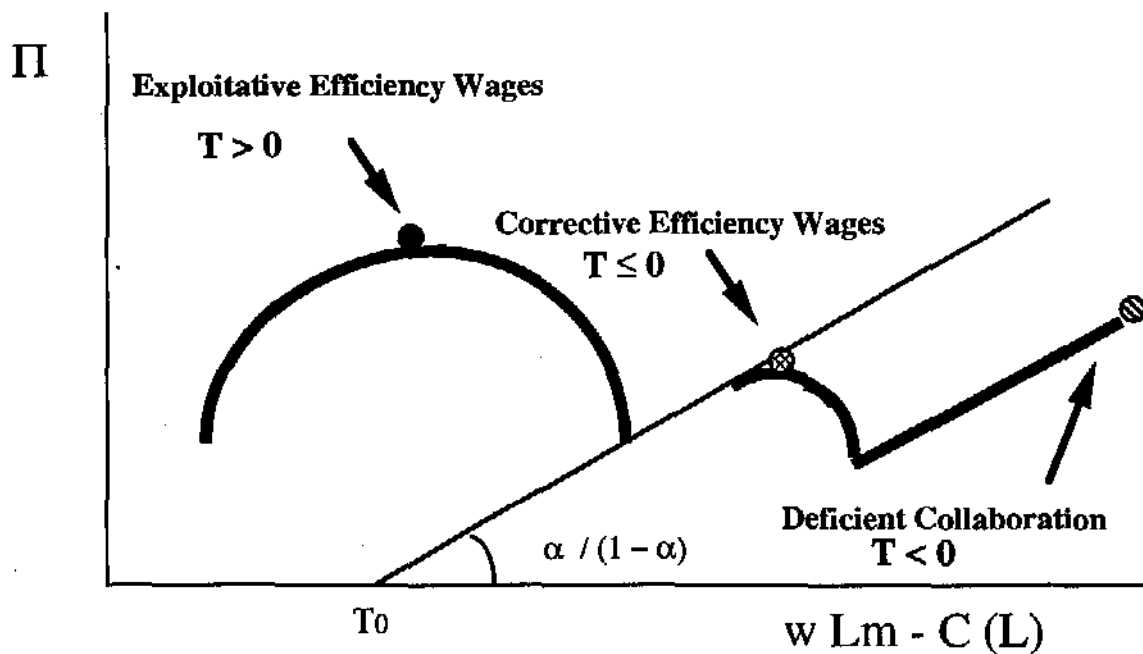


Figure 3B. Income distribution under alternative paths of profit maximization with moral failure.

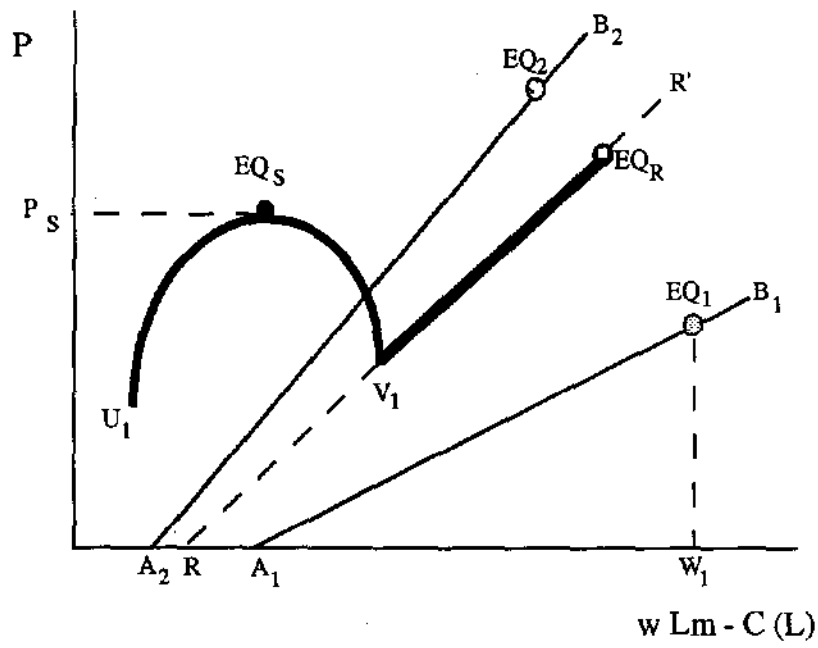


Figure 4 A. Conflictive principles of distribution conducting to a deficient collaborative regime.

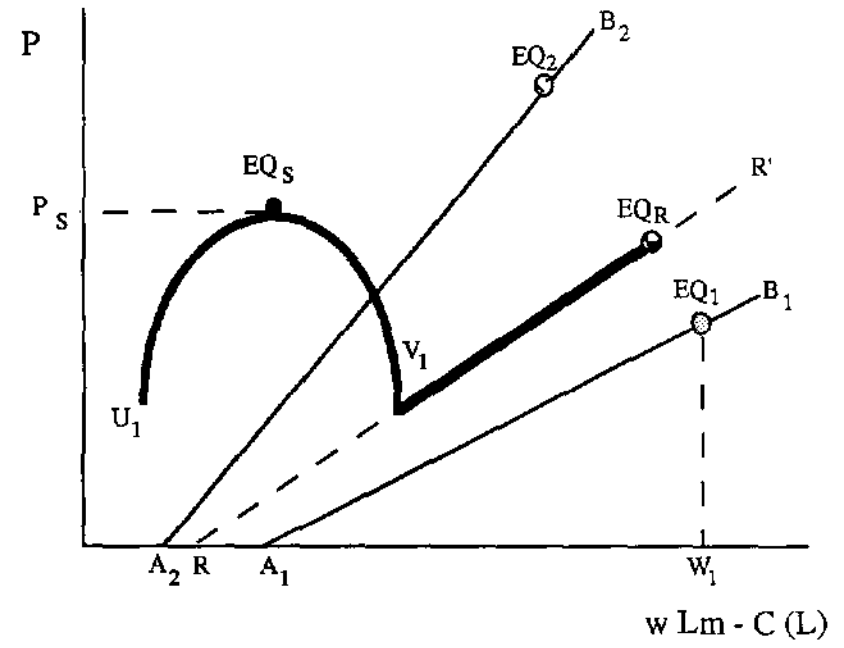


Figure 4 B. Conflictive principles of distribution conducting to an exploitative equilibrium.

Table1

TABLE 1. Equilibria Payoffs for Classical Ultimatum Games. The first number represents Proposer's monetary payoff (Sp), while the second represents Responder's utility.

		RESPONDER'S UTILITY		
		A	B	C
PROPOSER'S MONETARY PAYOFF	A	0.5, 0.5	0.5, 0.5	0.5, 0.5
	B	0.61, 0	0.63, 0.31	0.63, 0.37
	C	0.61, 0	0.75, 0	1, 0

Table2

Table 2. Conditions defining collaborative and "efficiency wage" equilibria.

	Workers Do Not Shirk	Workers Do Shirk
Superefficient Management	(1) Superefficient Collaboration (Efficiency, $T = 0$)	(3) Deficient Collaboration (Inefficiency, $T < 0$)
Efficiency wage Regime	(2) Supervised Exploitation (Inefficiency, $T > 0$)	(4) Moral Hazard Control (Inefficiency, $T \leq 0$) (5) Supervised Exploitation (Inefficiency, $T > 0$)