ON THE FEASIBILITY OF POWER AND STATUS RANKING IN TRADITIONAL SETUPS

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Abstract

This paper aims at a better understanding of the conditions under which unequal rank or power positions may get permanently established through asymmetric gift exchange when a gift brings pride to the donor and shame to the recipient. The central result obtained is that an asymmetric gift exchange equilibrium can occur only if the importance attached to social shame by a recipient is smaller than that attached to social esteem by a donor. Moreover, an income transfer is more likely to be traded against social esteem, status, or power when the weight put on these attributes by the donor or patron is higher. We also show that the recipients productivity may take on a rather wide range of values in the domain of feasibility of asymmetric gift exchange, and that, contrary to a commonly prevailing view, it is even possible that his productivity would be identical to that of the donor. Finally, the conditions are spelt out under which the recipients effort is more likely to be reduced upon entering into asymmetric gift exchange relationships.

Keywords: Social esteem, status, power, patronage, gift exchange.

JEL classification: O12 ; O17 ; Z13

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1 Introduction

Gift exchange relationships, in contrast to market-mediated relationships, have attracted the attention of economists only recently. This new interest emerged, in particular, within the fields of development microeconomics and the economics of organizations understood as networks of agency relations or contracts. Drawing inspiration from anthropological writings dealing with gift exchange and reciprocity in traditional set-ups (see Platteau 1991, for a review), development economists have embarked upon devising and testing theories of reciprocal state-contingent transfers conceived as informal mutual insurance mechanisms (see, e.g., Kimball 1988; Fafchamps 1992; Coate and Ravallion 1993; Paxson 1993; Townsend 1994; Udry 1994; Morduch 1999; Dercon and Krishnan 2000; Ligon, Thomas and Worrall 2002). A quid pro quo is clearly involved in these voluntary transactions since, as pointed out by a renowned anthropologist a long time ago, 'everybody is thereby insured against hunger: he who is in need today receives help from him who may be in like need tomorrow' (Evans-Pritchard 1940: 85).

Labour relations or contracts provide another interesting application of the economics of reciprocity. Where effort and quality are difficult to monitor, an employer may pay workers wages exceeding the market-clearing levels in order to elicit effort and commitment from them. The extra wage is then conceived as a gift which the worker returns by providing adequate amounts of effort and attention (Akerlof 1982; Fehr, Kirchsteiger, and Riedl 1998; Fehr and Gächter 2000). As for Holmstrom and Milgrom (1991), they detect elements of discretionary gift exchanges in any fixed wage. Gift exchange takes on an intergenerational form when parents promise bequests (including inter-vivos transfers) to their children in the expectation to receive attention from them in their old age (Bernheim, Schleifer and Summers 1985; Hoddinott 1992; Cox and Rank, 1992, Barham et al., 1997; Johnson et al., 2001; Laferrère and Wolff, 2006). In an alternative approach, individuals come to the help of their old parents in the hope that, through a sort of demonstration effect, their own children will behave likewise when they will themselves reach an advanced age (Cox and Stark 2005).

A last illustration is the theory of gift exchange proposed by Aoki (2001) (see also Carmichael and MacLeod (1997) for an approach using evolutionary game theory), which is actually very close to the type of account most commonly encountered in the anthropological literature. In this approach, the gift serves both as a signal to communicate a willingness to cooperate to a potential partner, and as a commitment device since, once the gift has been made, the donator's interest is to abide by a contract provided that the partner also does it.

It is noteworthy that in all the above examples transactions appear to be motivated by exchange rather than by altruism. In other words, the gift and the counter-gift are a manifestation of enlightened self-interest, or of selfishness with foresight. To characterize them as reciprocal altruism is therefore misleading. Another important characteristic of gift exchanges as modelled by economists is that the reciprocal gesture typically takes on the same tangible form as the gift that triggered it. Sociologists and anthropologists, on the other hand, pay attention to symbolic as well as to material aspects of gift exchange relationships. As a consequence, there is the possibility that the payback takes on a form different from the medium of the original favour (Ekeh 2004: 35). Commodities may thus be traded against symbolic attributes such as social prestige and political power: a material gift, which never goes un-repaid, can thus be reciprocated, say, by a demonstration of loyalty, allegiance, homage, respect subordination, devotion, etc...

An immediate implication is that gift exchanges can be asymmetrical, taking place between persons endowed with different wealth, rank or social status. In fact, as we have learned from the works of many anthropologists, more particularly Malinowski (1922), Mauss (1925), Polanyi (1944, 1968), Belshaw (1965), Sahlins (1960, 1974), Levi-Strauss (1969), and Bourdieu (1990), the whole point of the game may precisely consist for the dominant party of making sure that the tangible benefits or services that he renders (including insurance against the risk of hunger) can never be (fully) repaid. Being in his debt on the material level, the donee finds himself compelled to return the favour on another level, in ways that influence the donor's rank or status. Subordination is created and perpetuated because the obligation to reciprocate, which is a burden, cannot be relieved by means of a return gift equivalent to the initial gift (Offer 1997: 455). Upon this reading, social prestige and political power originate in asymmetric gift exchanges.

In interactions where an agent (the donee or beneficiary) occupies an inferior rank or position *vis-à-vis* the other agent (the donor or benefactor), the former is likely to experience a feeling of social shame or, to speak more generally, to incur some kind of cost of subordination. This aversive emotion of shame is actually the reverse side of the prestige or power afforded by the dominating party who is also the gift-giver. Therefore, in analyzing political power or social status relationships in traditional contexts characterized by face-to-face (asymmetrical) relationships, these two mirroring components of utility, one positive and the other negative, need to be taken into account simultaneously.

So far, economists have made only a few attempts to model social prestige and social shame simultaneously, and all these attempts are quite recent (Holländer, 1990; Van de Ven 2002; Gaspart and Seki 2003; Brennan and Pettit 2005; Platteau and Seki 2007). The present paper follows up these efforts, since it aims at a better understanding of the conditions under which unequal rank or power positions may get permanently established through asymmetric gift exchange when a gift brings pride to the donor and shame to the donee. It is noteworthy that the framework of patronage relations in which the party benefiting from a transfer accepts a low status and the accompanying loss of esteem (and freedom) can also be applied to international relations between aid-giving and aid-receiving countries, from where power considerations are rarely absent.

The structure of the paper is as follows. Section 2 further motivates the analysis proposed by briefly reviewing two types of relevant literature. First, attention is directed to the works of social scientists, anthropologists in particular, that vindicate our approach to power and status ranking. Thereafter, the rare attempts by economists to model social esteem and shame in a gift exchange framework are described and compared to the present endeavour. In Section 3, we present the basic assumptions underlying our model, with a special emphasis on the features of the social esteem function, and we derive and discuss the equilibrium values of effort levels and transfer amounts. Since our main purpose is to discover how various dimensions of heterogeneity in the agents' characteristics are susceptible of giving rise to an asymmetric gift exchange equilibrium, the agents are allowed to have different effort productivities (owing to different talents or different endowments in physical or human capital), different costs of effort, and different sensitivities to social esteem and shame.

We are then able, in Section 4, to analyze the conditions under which one party will prefer to make a transfer and the other party will prefer to accept it, compared to a situation of autarky. We find that an asymmetric gift exchange equilibrium can occur only if the importance attached to social shame by a recipient is smaller than that attached to social esteem by a donor. Moreover, the likelihood of asymmetric gift exchange increases with the weight put on social esteem or power by the donor. Regarding the conditions related to productivity levels (or effort costs), we show that, depending on the configurations of the esteem coefficients of the two parties, the recipients productivity may take on a rather wide range of values in the domain of feasibility of asymmetric gift exchange. Contrary to a commonly prevailing view, it is even possible, as shown in Section 5, that his productivity be identical to (or slightly higher than) that of the donor. The conclusive section, Section 6, summarizes our main findings and discusses an interesting application to the sphere of international relations.

2 Power or status as asymmetric gift exchanges

To explain power or status differentiation in terms of asymmetric gift exchange essentially means that the would-be dominant party tries to involve other members of the community in debt relationships. As a matter of fact, by accepting a gift, the donee manifests his readiness to play the role of the 'grateful recipient' (Schwartz 1967: 6). Thereby, he becomes an inferior and a subordinate, implying that he accepts the orders of the giver and complies with his wishes, thus rewarding him 'with power over himself as an inducement for furnishing the needed help' (Homans 1961: 319; Blau 1964: 21). In a like manner, Wintrobe (1998) considers that 'through the use of gifts, a donor, whether selfish or altruistic, can obtain power over recipients and induce their cooperation toward his or her own objectives' (p. 95).

Patronage relationships in the village societies of many developing countries seem to be grounded in such unequal exchange mechanisms, as attested by the frequent characterization of local patrons as 'Big Men' and the importance of symbolic exchanges of personal favours and obligations in this context (Polanyi 1944, 1968; Pitt-Rivers 1954; Belshaw 1965; Epstein 1968; Levi-Strauss 1969; Breman 1974; Scott 1976; Bourdieu 1990; Alexander 1982; Platteau 1995a). There are actually two different models of patronage and chieftaincy according to whether the making of regular tangible gifts by the dominant party is an obligation inherent in his power position, which is pre-established, or a means used toward creating the hierarchical order itself (Sahlins 1963; Finney 1972). The second situation, in which gift-making is the outcome of a strategic decision by a willing power-holder, is of more direct interest to the economist. In this more relevant case, gift exchange is a means by which the relations of domination and control are established. In the words of Mauss, 'the person who cannot return a loan loses his rank and even his status of a free man', which tends to happen in lineage-based economies where there is an unstable clan hierarchy changeable from time to time (Mauss, 1925: p.42; p.97, *fn.* 79; Gregory, 1982: p.20).

When considering the emergence of asymmetric power or status relationships in traditional social contexts, it is clearly important to bear in mind the cost of subordination for the subject person or the client. There is actually solid psychological evidence not only that pride is a rewarding emotion commonly elicited by dominance, but also that shame is an aversive emotion typically elicited by subordinance, and negatively correlated with self-esteem (Fessler 2001; see also Frank 1985, 1989; Robben and Verhallen 1994; Offer 1997; Clark and Oswald, 1998; Gächter and Fehr 1999)[1].

In Fessler's framework, there is no compensation (e.g., a gift) for social shame, and this is why people subject to this painful emotion tend to withdraw from interaction and, if it is not possible, they turn aggressive and attack the dominating individual in the hope of inverting the dominance relationship (Fessler 2001: 199-200). His analysis indirectly confirms Bourdieu's proposition that, in societies pervaded by highly personalized face-to-face relationships, and where there are no institutionalized rules governing access to, and reproduction of, power, power cannot be established in a direct and brutal manner lest the whole fabric of the society should be undermined and power prove unsustainable. In such circumstances where domination can only be exerted overtly, in its elementary form (from person to person), the practice of asymmetric gifts made 'under the veil of enchanted relations' epitomized by parent-children relationships, is the best method available to would-be patrons or chiefs concerned with making their authority accepted at a reasonable cost for the subject people:

> So long as overt violence. . . is liable to provoke either a violent riposte or the flight of the victim -that is, in both cases, for lack of any legal recourse, the destruction of the very relationship that was to be exploited- symbolic violence, gentle, invisible violence, unrecognized as such, chosen as much as undergone, that of trust, obligation, personal loyalty, gifts, debts, presents itself as the most economical mode of domination because it best corresponds to the economy of the system (Bourdieu 1990: 127).

[1] As pointed out a long time ago by David Hume (1888), in the same way that 'anger and hatred bestow a new force on all our thoughts and actions', it appears that , 'humility and shame deject and discourage us'(Book II, Section X, p.391).

To sum up, power is established and secured through the distribution of gifts to would-be supporters. They form a symbolic capital, and to the extent that followers are obliged to the emerging leader-benefactor without feeling humiliated, they are ready to pledge allegiance to him and accept their lower position. Gift-making thus appears as a sort of demonstrative expenditure, a kind of legitimizing self-affirmation through which power makes itself known and recognized. It awards itself a rudimentary form of institutionalization by officializing itself (Bourdieu 1990: 125, 131). If gifts are repeated more or less regularly, power can be maintained in this political war for rank, distinction and pre-eminence[2].

We can now shift our attention to the most relevant economic litterature. During recent times, economists have explored the motives susceptible of explaining charitable transfers and voluntary contributions to public goods. Essentially, they depict a gift-giver as deriving utility directly from an act of unselfish behaviour. For example, there is the warm glow effect first highlighted by Andreoni (1990) and according to which donors feel good about themselves. Another motivation worked out by Harbaugh (1998a, 1998b), and closer to our interest in this paper, is social prestige which is determined by reported gifts. When discussing patron-client relationships, economists have also allowed for the possibility of selfish, symbolic motivations for generous behaviour. This enables them to explain why, for example, patrons may choose to enter and stay into a pooling arrangement from which they do not apparently draw benefits comparable to those obtainable under autarky (Fafchamps 1992; Platteau 1995b). Or, it helps explain why Big Men will not take the entire surplus in order to enhance their status and signal that they are generous persons (Fremling and Posner, 1999). In these works, however, the trade-off between consumption and status appears only on the side of the gift-giver: the social shame experienced by the gift-receiver, and the fact that the gift may be used to establish or confirm hierarchical relations, are overlooked[3].

In a pioneer paper, Holländer (1990) considers the possibility of both positive and negative social approval in the context of a public good provision problem. In this setup, agents enjoy the gratitude and sympathy

[2]By contrast: 'In place of the relationships between persons indissociable from the functions they fulfil, which they can perpetuate only at direct personal cost, institutionalization sets up strictly established, legally guaranteed relations between recognized positions, defined by their rank in a relatively autonomous space, distinct from and independent of their actual and potential occupants. . . ' (Bourdieu 1990: 131).

[3]For an up-to-date survey of the variety of motivations underlying acts of giving, altruism, and reciprocity, see Kolm and Mercier Ythier (2006, vol.1), especially chapter 1, 2, 3 and 6.

of others if they happen to have contributed an above-average effort to the production of the public good. In the converse case where their contribution is comparatively small, they suffer from a negative approval effect. On the other hand, Gaspart and Seki (2003) and Platteau and Seki (2007) have explicitly modelled the two-way effects of unilateral transfers on self-esteem in the specific context of an income-pooling scheme with agents of different abilities exploiting a common property resource. While the former attempt to discover the conditions related to the operation of the esteem factor under which the effort equilibrium levels obtained under the scheme are identical to the first-best levels (bear in mind that, owing to the presence of externalities, decentralized effort decisions cannot achieve first-best efficiency in the absence of social esteem), the latter examine the conditions under which the agents would prefer to pool incomes under an equal division rule, and experience the associated esteem effects, to remaining autarkic and avoiding such effects. It is noteworthy that, in the second endeavour, but not in the first, sensitivities to esteem are assumed to be identical between agents. One of the central interests of Van de Ven (2002), on the other hand, is to explain the existence of reciprocal gifts. Instead of looking for the kind of motivations commonly used in the economic literature (see supra, Section 1), he explains gift-giving by a demand for social approval and conceives reciprocal gift-giving as an instrument in the race for status. However, he does not characterize the associated equilibrium and, therefore, we can never be certain that a gift made will be accepted in the assumed presence of social shame.

In contrast, the present attempt does not aim at explaining reciprocal gifts since we want to understand states characterized by permanent power and status asymmetries. It is true that such states could be viewed as the end outcomes of a series of rounds in which the agents make gifts and counter-gifts. However, we have chosen not to follow this path in order to concentrate our attention on the issue of feasibility of asymmetric states and the precise conditions under which they may obtain[4].

Compared to Platteau and Seki (2007), we want to build a more general framework in the three following senses. First, the amount of the transfer is endogenized rather than being fixed by a predetermined rule.

[4] In fact, Van de Ven has not proposed a dynamic game that really depicts the race for status. Essentially, what he does is to depict the reaction functions of the two agents in terms of the gifts (or counter-gifts) that they want to make. The equilibria as such are not derived and characterized, however. Moreover, since there are gifts and counter-gifts, the author conceives social approval as a net amount obtained by subtracting the negative social esteem accompanying the receipt of gifts from the positive esteem associated with the making of gifts to the partner. The psychological foundations of this sort of esteem arithmetic are far from obvious, however

Second, the sensitivities to social esteem and shame are left free to vary between the agents. And, third, the social esteem function is not restricted to a linear form. Unlike what is done in Gaspart and Seki (2003), we are not interested in comparing the equilibrium obtained under a transfer scheme with the first-best efficient equilibrium, but in comparing it with autarky. Moreover, in the situation which we are going to examine, there is no pooling of incomes so that the question as to whether social esteem considerations can possibly mitigate moral hazard in team problem does not arise.

3 The setup of the model and first results

3.1 The setup of the model

Two individuals choose their optimal effort level which is the unique and costly input in the production of a consumption good. The agents are endowed with different productivities, and their disutility of effort may also differ. The production function is atomistic (no production pooling is possible across the two agents) and linear in the effort invested, and the effort cost function is convex. Each agent derives a positive utility from the total amount produced and consumed, and a disutility from working. We assume that only one agent has the ability to make a gift that the other agent can either accept or refuse. Part of the effort applied by the donor is allocated to producing his own consumption good, while the remaining part is allocated to producing the gift. When a gift is accepted, the donor, who has chosen the optimal gift-producing effort, achieves a higher social status or prestige because he contributes to the recipient's material welfare. As for the latter, although he enjoys an increase in utility arising from the additional consumption allowed by the gift, he also suffers from a loss of status or esteem that negatively affects his utility. Yet, he is only a potential recipient since he could reject the gift. If he does we are back to a situation of no interaction between the agents who, being autarkic, derive utility from consumption of own production alone.

It is important to note here that the very possibility of gift rejection implies that information is somehow limited. Indeed, if information about the other agent's utility is perfect on both sides, there will always be a gift in equilibrium. Thus, if the willing patron knows that the optimal gift he would like to make will be rejected by the targeted client, he will adjust its amount so as to make it acceptable. In such a situation, the client who knows the patron's utility appears able to manipulate him by choosing an appropriate level of effort. Rather paradoxically, to prevent this counter-intuitive possibility of the client driving the game, we need to assume that the information of the potential patron regarding the utility of his potential client is limited, echoing the familiar game-theoretic point that 'a player may gain from limiting his own information if the opponents know he has done so because this may induce the opponents to play in a desirable fashion' (Fudenberg and Tirole, 1991: 55). A reasonable way of thinking about such a limitation in the context of our problem is the following: the possibility of gift rejection arises because *ex ante* the patron ignores the extent of social shame experienced by a particular client when benefiting from a transfer made under the generous appearance of a gift (see supra). It is only when a gift is refused that he acquires information about the preference profile of the targeted beneficiary. What is thus assumed is that the patron has a rough idea about the distribution of different types of potential clients in his community, yet cannot detect types beforehand. When a gift is refused and the sought power relationship cannot therefore be established, the patron costlessly proposes the gift to another member of the community. In other words, we also assume that around the patron there are enough persons ready to accept the gift offered, so that he never needs to vary the amount computed *ex ante* on the basis of the beneficiary's level of effort (which is observed). The important point to bear in mind is that our analytical framework is designed in such a way that power relations are not automatically established, thus lending credence to real world stories of families or individuals stubbornly choosing to remain outside of patronage networks or power games (Colin, 2004).

After having discussed the informational assumptions underlying the game, we describe its structure. It is a sequential, three-step game in which the recipient of the gift is the first mover. He decides his work effort in the light of three pieces of information. First he knows the utility function of the donor, implying that he anticipates the amount of the gift that he will be offered as a result of his effort choice. Second, he knows his exit option which takes the form of the reservation utility that he gets when acting alone. Third, he knows that the donor ignores his potential client's utility function, as a consequence of which the donor does not consider the possibility that his gift proposal may be rejected by the potential recipient. Moreover, this knowledge is common to both the donor and the recipient. Once the recipient has thus chosen his work effort, the potential donor simultaneously chooses his own consumption level and the amount of the gift. In the final stage of the game, the potential recipient decides whether to accept or refuse the gift proposed by the potential donor. If the gift is rejected, the donor consumes his output integrally.

The specification of the social esteem function requires some discussion. There are two possible approaches that we want to consider. First, we have the conventional approach according to which the amount of social esteem or shame experienced by the agent is proportional to the absolute value of the gift given or received. In the second approach, social esteem or shame is a function of the share of the gift in the recipient's total consumption. We believe that this latter approach is more appropriate to describe situations in which power is at stake: the larger the share of the gift in the donee's consumption, the higher the degree of his dependence on the donor, and the stronger the power afforded by the donor. Upon this understanding, even a gift of small (absolute) value might give rise to a lot of power if it constitutes a substantial portion of the recipient's consumption.

This being said, the first approach is worth examining since it is actually devoid of any element of strategic interactions, a result of the fact that the effort chosen by the recipient does not affect the esteem value of the gift for the donor. A rather straightforward result is, therefore, obtained which will be usefully compared to the more complex results obtained under the second approach.

Let us write a utility function that has three components: a first component which reflects the direct effect of own effort (assumed to be linear); a second component which reflects the cost of total effort (assumed to have a convex form); and a third component, measuring the influence of esteem, that is a (non-linear) function of the absolute amount of the gift's transfer. We thus have the following utility functions for the gift maker (agent i) and the recipient (agent j):

$$U_i(x_i, t_i, x_j) = \alpha_i x_i - \beta_i (x_i + t_i)^2 + \underline{u}_g e_i (\alpha_i t_i)^\gamma \tag{1}$$

$$U_j(x_j, t_i) = \alpha_j x_j - \beta_j x_j^2 + \underline{u}_g \left\{ \alpha_i t_i - e_j (\alpha_i t_i)^\gamma \right\} \tag{2}$$

where the two constants, e_i and e_j, stand for the non-negative esteem parameters, the α parameters are the agents' respective marginal productivities of effort, the β's measure the costs of effort, and $\underline{u}_g$ is an indicator function equal to the unit value when the recipient accepts the gift. In the above specification, the total effort chosen by agent i is allocated between production of his own consumption good, x_i, and production of a gift for j, t_i. Therefore $\alpha_i x_i$ measures his consumption, and $\alpha_i t_i$ corresponds to the amount of the gift. As for the parameter γ, it determines whether the esteem component of the utility function is concave, convex, or linear.

For the gift-maker, the optimal levels of own consumption and the gift are obtained by maximizing his utility function with respect to x_i and t_i. The resulting equilibrium values are, respectively:

$$\alpha_i t_i = (\gamma e_i)^{\frac{1}{1-\gamma}} \tag{3}$$

$$\alpha_i x_i = \frac{\alpha_i^2}{\beta_i} - \alpha_i t_i \tag{4}$$

Likewise, the optimal level of effort of the recipient is obtained by maximizing his utility function with respect to x_j, yielding the following expression for his self-produced consumption:

$$\alpha_j x_j = \frac{\alpha_j^2}{2\beta_j} \tag{5}$$

It is noteworthy that this value is independent of the amount of the gift. In fact, it is strictly identical to the value obtained under autarky (which is derived by maximizing j's utility function from which the esteem component has been removed). The next step is to check whether the gift is acceptable to player j, the potential recipient. In fact, since self-produced consumption of player j is independent of the value of the gift, the gift will be accepted only if its intrinsic utility is greater than the loss of status involved. Comparing j's utility in the presence of the gift with his utility under autarky, and using (3), we obtain the following condition:

$$\alpha_i t_i \geq e_j(\alpha_i t_i)^{\gamma} \Rightarrow (\gamma e_i) \geq e_j$$

Clearly, when status is influenced by the absolute amount of the gift, and when the esteem function is concave or linear ($\gamma \leq 1$), the importance attached to social shame by the donee must not exceed that attached to social esteem by the donor if the former is to accept the gift. And the stronger the concavity, the more stringent the condition.

Making the players' utility a function of the relative contribution of the donor's gift in the donee's total consumption has the effect of enriching our framework in the two following senses. First, the recipient strategically selects his work effort, and, second, the impact of a gift on the social esteem component of the utility of both agents is no more independent of the level of the recipient's production. As a first attempt, we have used the logarithmic form to describe the influence of social esteem on the two players' utilities. Unfortunately, if this specification is rather easy to handle, it leads to results that do not have the general character that we aim at. In particular, as shown in Appendix (A.1), the equilibrium level of effort of the recipient does not depend on the esteem coefficient of the donor, nor on the productivity of either agent.

We have, therefore, chosen to use a less elegant but more fecund specification which we write as follows, assuming as before that player i is the gift-maker:

$$U_i(x_i, t_i, x_j) = \alpha_i x_i - \beta_i (x_i + t_i)^2 + \underline{u}_g \left\{ e_i \left[\left(\frac{\alpha_j x_j + \alpha_i t_i}{\alpha_j x_j} \right)^{\gamma} - 1 \right] \right\} \tag{6}$$

$$U_j(x_j, t_i) = \alpha_j x_j - \beta_j x_j^2 + \underline{u}_g \left\{ \alpha_i t_i - e_j \left[\left(\frac{\alpha_j x_j + \alpha_i t_i}{\alpha_j x_j} \right)^{\gamma} - 1 \right] \right\} \tag{7}$$

For the sake of computational convenience, we have written the argument of the esteem component of the utility function not as the ratio of the gift to j's total consumption, but as the percentage by which the gift allows j to increase his consumption[5].

As in the previous specification, the parameter γ determines the shape of the esteem function. This is evident from Figure (1), where the amount of social esteem or shame experienced by player i, which is measured along the vertical axis, varies according to the amount of the gift made or received by him, which is measured along the horizontal axis. Three different curves have been drawn depending on the value of γ, all under the assumption that the effort of the gift-receiver is fixed. In the North-East quadrant, i makes a gift to j, and enjoys social prestige accordingly. By contrast, in the South-West quadrant, it is now j

[5]When we use the ratio of the gift to j's total consumption, denoted by $F(x_i, t_i, x_j)$, as argument of the esteem function, the optimizing procedure leads to complex expressions (multiple-root polynomials) that are very hard to handle analytically. We have, therefore, opted for the specification given in the text, that we denote by $E(x_i, t_i, x_j)$. The good news is that this function behaves in a fairly similar fashion to $F(.)$. Indeed, if we denote by $E_{x_j^n}(.)$ its n^{th}-order derivative with respect to x_j, we are able to show that $sign\Big[F_{x_j}(.)\Big] = sign\Big[E_{x_j}(.)\Big]$, $sign\Big[F_{x_j^2}(.)\Big] = sign\Big[E_{x_j^2}(.)\Big]$, $sign\Big[F_{t_i}(.)\Big] = sign\Big[E_{t_i}(.)\Big]$, and $sign\Big[F_{t_i^2}(.)\Big] = sign\Big[E_{t_i^2}(.)\Big]$.

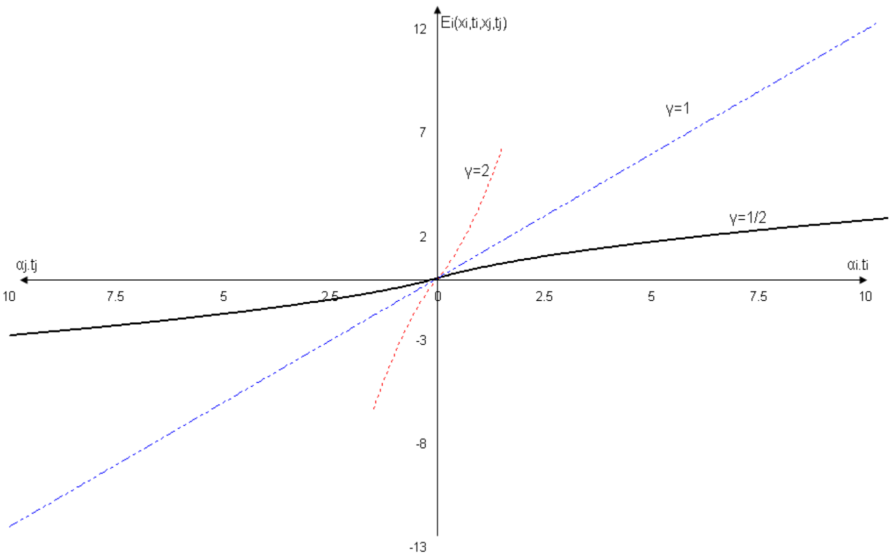

Figure 1: Esteem Component of agent i's utility function

who makes a gift to i, who suffers from social shame. It is debatable which shape is more convenient to describe a phenomenon as complex as social esteem. Yet, for our purpose, concavity appears to offer a better description of human emotions ($\gamma < 1$). The initial units of a gift received cause the greatest pain in as much as they create a dependence on the donor's goodwill. Additional units have a diminished impact since the donee has become accustomed to his dependent position. By analogy, this holds true for the donor as well: his social prestige increases with his apparent generosity, but mostly when his relative contribution to the donee's consumption is low.

For the sake of completeness, however, we will check how the alternative assumptions of a convex ($\gamma > 1$), or a linear ($\gamma = 1$), esteem function affect our results.

We are now ready to solve the two-stage game of gift-and-esteem exchange when players strategically interact.

3.2 First results

The maximization problem of player i, the potential gift-maker, when the gift is both made and accepted, is given by:

$$Max_{x_i,t_i}\{\alpha_i x_i - \beta_i(x_i+t_i)^2 + e_i\Big((\frac{\alpha_j x_j + \alpha_i t_i}{\alpha_j x_j})^{\gamma} - 1\Big)\} \tag{8}$$

$$\text{s.t.} \qquad x_i \geq 0 \tag{9}$$

$$t_i \geq 0 \tag{10}$$

Combining the two first-order conditions, and assuming that the two constraints are not binding, we obtain:

$$x_i = \frac{\alpha_i}{2\beta_i} - t_i \tag{11}$$

$$\Rightarrow t_i = \frac{\alpha_j x_j}{\alpha_i}\Big((\frac{\alpha_j x_j}{e_i\gamma})^{\frac{1}{\gamma-1}} - 1\Big) \tag{12}$$

Conditions (9) and (10) can then be re-written as:

$$\frac{\alpha_i}{2\beta_i} \geq t_i \Rightarrow \frac{\alpha_i^2}{2\beta_i} \geq \Big(\frac{(\alpha_j x_j)^{\gamma}}{e_i\gamma}\Big)^{\frac{1}{\gamma-1}} - \alpha_j x_j \tag{9'}$$

$$\tfrac{\alpha_j x_j}{e_i\gamma} \geq 1 \qquad \text{if } \gamma > 1$$

$$\tfrac{\alpha_j x_j}{e_i\gamma} \leq 1 \qquad \text{if } \gamma < 1 \tag{10'}$$

Starting with condition (10'), it is evident that, when the social esteem function is concave, player i agrees to make a gift to player j only if js self-produced consumption is small enough compared to the importance attached to social esteem by i. The opposite condition obtains when the esteem function is convex. This is an intuitive result. Indeed, when social esteem rises quickly at low levels of the recipient's dependence on the donor, the donor will be satisfied with a moderate degree of dependence of the donee but this requires that the latter's output is sufficiently large. This condition is less constraining, however, if the donor is not very sensitive to esteem (e_i is small). On the other hand, as condition (9') shows, player i will make a positive effort towards his own consumption ($x_i > 0$) only if he is productive enough (high α_i) and/or the cost of his effort is relatively low, and/or the importance attached to social esteem by him is not too high (bear in mind that $\gamma < 1$). If it is too high, indeed, his effort would be totally absorbed in the production of the gift. Lastly, as is evident from (12), i will never make a gift to agent j if the latter is a complete parasite ($x_j = 0$).

On the other hand, the maximum feasible amount of the gift is given by $\alpha_i^2/2\beta_i$, which is obtained by setting $x_i = 0$ in (11), and multiplying the resulting value of t_i by α_i.

Let us now turn to the problem of the potential gift-receiver, player j. Bearing in mind the informational conditions of the game, this problem is written thus:

$$max_{x_j}\left\{\alpha_j x_j - \beta_j x_j^2 + \alpha_i t_i - e_j\Big((\frac{\alpha_j x_j + \alpha_i t_i}{\alpha_j x_j})^\gamma - 1\Big)\right\} \tag{13}$$

$$\text{s.t.} \qquad x_j \geq 0 \tag{14}$$

$$\alpha_j x_j - \beta_j x_j^2 + \alpha_i t_i - e_j\Big((\frac{\alpha_j x_j + \alpha_i t_i}{\alpha_j x_j})^\gamma - 1\Big) \geq U_j^a = \frac{\alpha_j^2}{4\beta_j} \tag{15}$$

$$\begin{cases} \alpha_i t_i = \alpha_j x_j\Big((\frac{\alpha_j x_j}{e_i\gamma})^{\frac{1}{\gamma-1}} - 1\Big) \text{ if } \alpha_i t_i \leq \frac{\alpha_i^2}{2\beta_i} \\ \quad = \frac{\alpha_i^2}{2\beta_i} \qquad \text{otherwise} \end{cases} \tag{16}$$

Condition (15) is the gift acceptability condition, where U_j^a stands for the utility obtained by j under autarky. As for condition (16), it reflects the above-derived constraint that there is a maximum amount of gift feasible on the part of agent i.

At this stage, we can write the optimal level of effort put in by j under the assumption that none of the three constraints is binding. This is done by substituting the optimal value of the gift given by equation (12) into j's utility function.

$$\Rightarrow x_j^o = \left[\Big(\frac{\alpha_j}{e_i}\Big)^{\frac{\gamma}{\gamma-1}} \frac{(e_i\gamma - e_j)}{(\gamma-1)\gamma^{\frac{1}{\gamma-1}} 2\beta_j}\right]^{\frac{\gamma-1}{\gamma-2}} \tag{17}$$

Bearing in mind that $\gamma < 1$, it is obvious that j's equilibrium effort, as given by (17), is positive if $e_j > \gamma e_i$. When this condition is violated, it must be the case that at least one of the constraints is binding. As a matter of fact, when j's sensitivity to social shame is below a certain threshold value, j applies an infinitesimally small amount of effort so as to compel i to make an infinitely large amount of gift. Constraint (16) is therefore binding. As a consequence, j chooses the amount of effort just sufficient to obtain the maximum amount of gift and then compares the associated utility with his reservation utility[6]. If the latter

[6]If condition 16 is binding, then $\alpha_i t_i = \alpha_i^2/2\beta_i$ (Because he produces a very low amount, the client attracts a considerable gift). Since i is constrained in the amount of the gift, j knows he can extract at most $\alpha_i^2/2\beta_i$ and, thus, j produces the precise amount of effort that will generate such a gift. Note that in such conditions j will gain more utility by increasing his effort than

exceeds the former, condition (15) is also binding implying that the gift is refused. It is noteworthy that such a possibility may also arise when the condition $e_j > \gamma e_i$ is satisfied, but this is a particular case.

At this juncture, it is useful to assume that $\gamma = 1/2$ in order to refine our interpretation of the equilibrium conditions. First consider the viewpoint of agent i. Since the marginal cost of production is identical whether the effort is directed towards own consumption or towards gift-giving, we need not be concerned with this trade-off: at equilibrium the marginal benefits in both activities (own consumption and transfer) ought to be identical and total effort should be such that they both equal the marginal cost of production. Raising t_i by one unit implies a decrease of α_i in the amount of own consumption: the marginal opportunity cost of increasing t_i is thus the productivity of the gift-giver's effort. As for the marginal benefit of the same, it is measured in terms of a gain of esteem/status. Derived from (6), it is measured by:

$$\frac{e_i \alpha_i}{2(\alpha_j x_j)^{1/2}(\alpha_j x_j + \alpha_i t_i)^{1/2}} > 0$$

This expression is positive but decreasing in $\alpha_i t_i$, since the esteem function is concave. Moreover, larger values of $\alpha_j x_j$ push the marginal benefit of gift-giving downwards. Denoting by E_i the esteem component of the utility function of player i, we have that:

$$\frac{\partial E_i}{\partial t_i} > 0 \quad , \quad \frac{\partial E_i^2}{\partial^2 t_i} < 0 \quad , \quad \frac{\partial E_i^2}{\partial t_i \partial x_j} < 0$$

Clearly, a higher amount of effort on the part of the beneficiary causes the marginal value of gift-giving (as measured by $\partial E_i/\partial t_i$) to diminish. As a result, in order to restore the equality between the marginal benefit of own production (α_i) and the marginal benefit of esteem ($\partial E_i/\partial t_i$), the donor reduces the amount of his gift. This is the meaning behind the comparative static result $\partial t_i/\partial x_j < 0$ obtained from (12)[7].

Keeping in mind the logic behind the donor's decision, we may turn to the recipient's problem. Concentrating our attention on the case where an asymmetric gift exchange occurs, and plugging the optimal value of the gift chosen by player i in his utility function, we obtain for $\gamma = 1/2$:

by reducing it: on the one hand, he increases the amount of his self-produced consumption and, on the other hand, he reduces the social shame associated with his dependence status. Thus, provided that $\alpha_i t_i = \alpha_i^2/2\beta_i$, equation (12) will be satisfied with strict equality when $\alpha_j x_j = \frac{\sqrt{\left(\frac{\alpha_i}{2\beta_i}\right)^2 + (4e_i)^2} - \frac{\alpha_i}{2\beta_i}}{8}$. Since, however, j does not hit his first best solution, we must still check whether 15 is satisfied.

[7]We, indeed, have that $\frac{\partial t_i}{\partial x_j} = -\frac{\alpha_j}{\alpha_i}\left[1 + \left(\frac{e_i}{2\alpha_j x_j}\right)^2\right]$.

$$U_j = \alpha_j x_j - \beta_j x_j^2 + \frac{e_i^2}{4\alpha_j x_j} - \alpha_j x_j - \frac{e_j e_i}{2\alpha_j x_j} + e_j \tag{18}$$

Taking the first order derivative w.r.t. x_j, we get:

$$\partial U_j/\partial x_j = \alpha_j - 2\beta_j x_j - \Big(\frac{e_i^2}{4\alpha_j x_j^2} + \alpha_j\Big) + \frac{e_j e_i}{2\alpha_j x_j^2}$$

The marginal benefit of x_j is the sum of the first and the fourth terms in the above expression, that is, respectively, the marginal increase in self-produced consumption, and a decrease in the loss of social esteem. Regarding the latter, remember that, when x_j is raised, i responds by diminishing the amount of the gift, which eventually leads to a lower dependence ratio, $\frac{\alpha_j x_j + \alpha_i t_i}{\alpha_j x_j}$.

The marginal cost, on the other hand, is the sum of the marginal cost of effort (the second term) and the reduced amount of the gift (the third term). It is evident from this third term that the forsaken amount of the gift is a negative function of $\alpha_j x_j$.

If we assume now that the constraints (14), (15) and (16) are not binding, we can equate $\partial U_j/\partial x_j$ to zero, and thereby obtain the equilibrium amount of effort applied by agent j:

$$\alpha_j x_j = \frac{1}{2}\left(\frac{\alpha_j^2}{\beta_j} e_i^2 \big(2\frac{e_j}{e_i} - 1\big)\right)^{1/3} \tag{19}$$

It is immediately obvious that, when the equilibrium amount of effort of agent j is positive, which implies that $e_j \geq e_i/2$, the output produced by him increases as his productivity is higher (or his cost of effort lower), and as his esteem coefficient is larger:

$$\frac{\partial \alpha_j x_j}{\partial \alpha_j} > 0 \ , \ \frac{\partial \alpha_j x_j}{\partial \beta_j} < 0 \ , \ \frac{\partial \alpha_j x_j}{\partial e_j} > 0 \ , \ \frac{\partial \alpha_j x_j}{\partial e_i} \gtrless 0$$

The first two results are standard, and the third one reflects the fact that, when agent j is more sensitive to social shame, he responds by increasing his level of output so as to mitigate the shame effect. As for the effect of a change in agent i's esteem coefficient on agent j's output (and effort), it is indeterminate. However, we will show at a later stage that this indeterminacy can be lifted once we introduce further restrictions corresponding to the domain of feasibility of the asymmetric gift exchange. It is straightforward that the partial derivatives of j's equilibrium amount of effort with respect to β_j and e_j have the same signs as those shown above. Yet, the effect of a change in α_j on x_j is negative, implying that productivity and effort are substitutes in the case of the gift beneficiary. This outcome contrasts with that obtained for the gift-maker: as can be seen from equation (11), when agent i's productivity increases, his total effort (and output) also increase.

The above discussion is based on the assumption that the social esteem function is concave. When this function is convex or linear, it appears that interior solutions can no more be obtained. In the case of convexity, player j will either choose to produce no effort at all, or to apply an infinite amount of effort. In the former case, player i will make no gift, while, in the latter case, he will produce the maximum amount of gift compatible with his productive ability. In the case of linearity, irrespective of the amount of effort applied by player j, player i will either decide to make no gift, or to produce the maximum amount compatible with his productive ability (hence the fact that the case $\gamma = 1$ does not figure out in condition (10')).

A formal proof of these results is provided in Appendix A.2.

4 Conditions for mutual agreement on a gift

We may now embark upon the central task of determining whether player j will actually accept the gift proposed by player i. To answer this question, we compare the utility that j would gain by accepting the gift, U_j^o, with his stand alone utility, U_j^a. Bearing equation (5) in mind, the gift acceptability condition is the following:

$$U_j^o = \alpha_j x_j^o + \alpha_i t_i^o - \beta_j x_j^{o2} - e_j\Big((\frac{\alpha_j x_j^o + \alpha_i t_i^o}{\alpha_j x_j^o})^\gamma - 1\Big) \geq \frac{\alpha_j^2}{4\beta_j} = U_j^a$$

Using the results derived up to now, is re-written as:

$$e_j \geq \frac{\alpha_j^2}{4\beta_j} + (e_j - e_i\gamma)\Big(\frac{\alpha_j x_j^o}{e_i\gamma}\Big)^{\frac{\gamma}{\gamma-1}} + \beta_j x_j^{o2}$$

or, using the value of x_j^o,

$$e_j \geq \frac{\alpha_j^2}{4\beta_j} + \left[\frac{\alpha_j^2(e_j - \gamma e_i)^{\frac{2(\gamma-1)}{\gamma}}}{(1-\gamma)2\beta_j\gamma e_i^2}\right]^{\frac{\gamma}{\gamma-2}} + \beta_j\left[\frac{\alpha_j^{\frac{\gamma}{\gamma-1}}(e_j - \gamma e_i)}{(1-\gamma)2\beta_j(\gamma e_i^\gamma)^{\frac{1}{\gamma-1}}}\right]^{\frac{2(\gamma-1)}{\gamma-2}} \quad (20)$$

Unfortunately, the above condition is analytically intractable. To simplify matters, we shall set $\gamma = 1/2$, and try to elucidate under what conditions a patron-client relation is likely to emerge and determine the characteristics of the would-be patron and the would-be client. Condition (20) thus becomes:

$$e_j - \frac{\alpha_j^2}{4\beta_j} - \frac{3}{4}\Big(\frac{e_i^2(2e_j - e_i)^2\beta_j}{\alpha_j^2}\Big)^{1/3} \geq 0 \tag{21}$$

The stage is now set for an inquiry about the feasibility of a mutually profitable (asymmetrical) gift exchange in the relevant domain of the esteem coefficients.

To begin with, let us write down the value of the gift potentially made by agent i when the equilibrium effort level applied by player j is taken into account. This is done by plugging equation (17) into equation (12), and multiplying by α_i. We thus obtain the following expression:

$$\alpha_i t_i^o = \left[\frac{\alpha_j^2(\gamma e_i - e_j)}{(\gamma-1)2\beta_j(\gamma e_i^\gamma)^{\frac{1}{\gamma-1}}}\right]^{\frac{\gamma-1}{\gamma-2}} \times \left[\left[\frac{\alpha_j^2(\gamma e_i - e_j)}{(\gamma-1)2\beta_j\gamma e_i^2}\right]^{\frac{1}{\gamma-2}} - 1\right] \tag{22}$$

When $\gamma = 1/2$, this expression will be positive if:

$$\kappa \leq \frac{e_i}{2X} + 1/2 \tag{23}$$

where κ is the ratio of esteem coefficients ($\kappa = e_j/e_i$), and X measures the (squared) productivity of player j relative to his effort cost ($X = \alpha_j^2/\beta_j$).

The interpretation of this condition is straightforward: a gift is more likely to be made by agent i when (1) agent i puts more weight on social esteem, (2) agent j attaches lower importance on social esteem/shame, and (3) the productivity of agent j is lower (or his effort cost higher).

For the potential gift made by agent i to be acceptable by j, we know that condition (21) must be satisfied. With the above notations, it can be re-written in a form that is more simple, yet remains difficult to interpret:

$$X^{1/3}(4\kappa e_i - X) \geq 3e_i^{4/3}(2\kappa - 1)^{2/3} \tag{24}$$

Given the complexity of the condition obtained for the acceptability of the gift by j, we must resort to the simulation technique, at least as a first step, in order to highlight the critical factors that eventually determine the feasibility of an asymmetrical gift exchange. Towards that purpose, we use equations (23) and (24). The method followed consists of fixing e_i, and then varying the X and κ parameters to see when the above two conditions are satisfied.

In Figure (2), the dark-shaded area depicts the domain of (X, κ) values within which the gift is accepted by agent j, assuming that $e_i = 10$. Above $\kappa = 1/2$, this domain is made of two triangle-like areas, one of which is inverted, touching each other at their summits (what happens in the domain where $\kappa < 1/2$ will be discussed later). Looking at the lower triangle above $\kappa = 1/2$, it appears that, when the potential donee attaches more importance to social shame (higher values of κ), he is less likely to accept the gift, which is according to intuition. For a given, rather low value of e_j ($\kappa < 1$), j's inducement to accept the gift increases with his own productivity, yet only up to to a certain point beyond which his inducement starts to decrease. Ultimately, the gift is refused. Bear in mind that an increase in the productivity of agent j implies that, all other things being equal, his degree of dependence on agent i's generosity is lower and, therefore, the cost of a gift in terms of loss of esteem is smaller. Above a certain threshold, however, his productivity becomes so large that he prefers to remain autarkic.

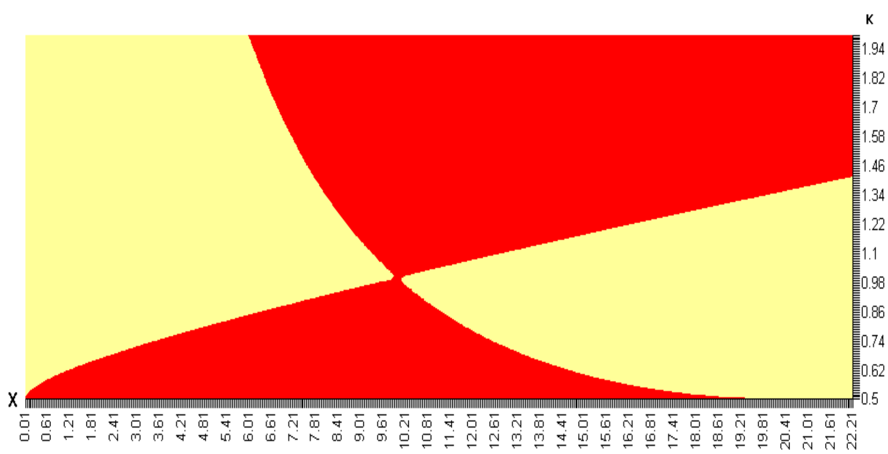

Figure 2: Gift acceptability condition ($e_i = 10$)

Less obvious is the situation described by the upper, inverted, triangle. As the weight put on social shame increases above a certain threshold, which is in the neighbourhood of 1 ($e_i = e_j$), the prospect of acceptance of the gift by agent j improves provided that his effort productivity is moderately high, yet not too high (or his cost of effort is moderately low, yet not too low. Beyond a certain value of κ, the gift is always accepted if X is high enough.). The idea is that, when shame significantly affects the utility of agent j, he is quite eager to reduce his dependence vis-a-vis agent i, and this implies that he puts in a good amount of effort.

If productivity of such effort is not sufficiently high, it is not worth applying it and autarky is preferable. Above a certain level of productivity, however, j prefers to avoid social shame altogether by refusing the gift and being on his own.

Does the result depicted in Figure (2) depends on the value of the donor's esteem coefficient? To answer that question, we have drawn, in Figure (3), the domain of acceptability of the gift when the value of e_i is reduced from 10 to 1. It is immediately apparent that, if the shape of the domain is broadly similar, it has shifted leftwards and its size has been considerably reduced. With $e_i = 1$, only low values of the recipient's productivity are susceptible of inducing him to accept the gift. The rationale is the following: when the donor is not very sensitive to social esteem or power, he will make a rather small gift yet, if the recipient's productivity is low, this small gift will represent a large share of the latter's income and accepting it is profitable.

To sum up, a patron-client relationship is more likely to arise when the potential donor puts a greater weight on social esteem or power. This may imply that patronage has a more fertile ground to grow on if the group to which the donor and the recipient belong has a larger size. Indeed, as pointed out by Fessler (2001) on the basis of experimental psychological evidence, there is a positive relationship between the esteem coefficients and the number of witnesses: the intensity of Shame or Pride experienced is in part contingent on the audience present (p.201). This is true, however, only if the number of witnesses belong to the reference group of the donors and donees: an agent can obtain positive or negative approval from people who know his behaviour only if the latter are able, in one way or another, to communicate their feelings to him (Holländer, 1990 p.1159). Likewise, Ekeh alludes to the importance of the audience when he points out that a generous wealthy kinsman may receive his reward in the amount of honour he acquires from the elite kinship dominion (2004: 35).

The condition for gift making by agent i (condition (23)) is depicted by the dark shaded area in Figure (4) from which we can easily check the validity of what has been said earlier about the conditions most conducive to a gift offer. When the two feasibility areas are superimposed on each other, we obtain Figure (5). A striking feature is that the upper triangle appearing in Figures (2) and (3), which describe the condition for gift acceptability by agent j, has vanished. As has been pointed out earlier, above a certain value of e_j,

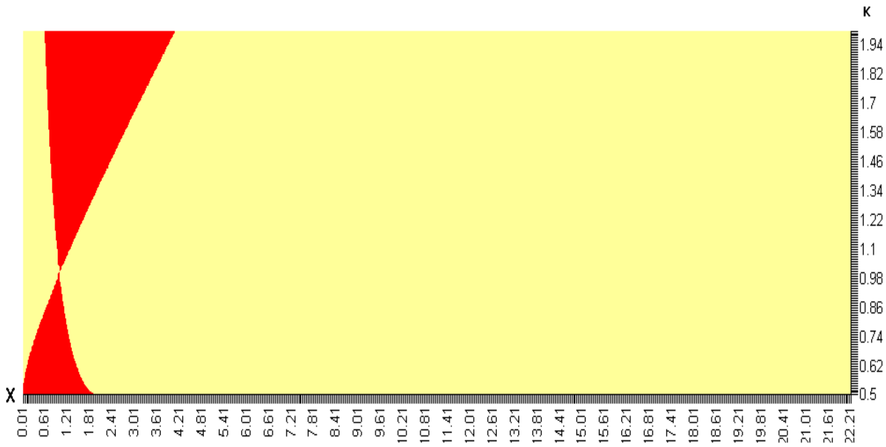

Figure 3: Gift acceptability condition ($e_i = 1$)

agent j starts putting in a lot of effort to mitigate the effect of social shame and, as a consequence, the cost of making a gift for agent i increases (bear in mind that the argument in the esteem function is not the absolute value of the gift, but the share it represents in j's consumption).

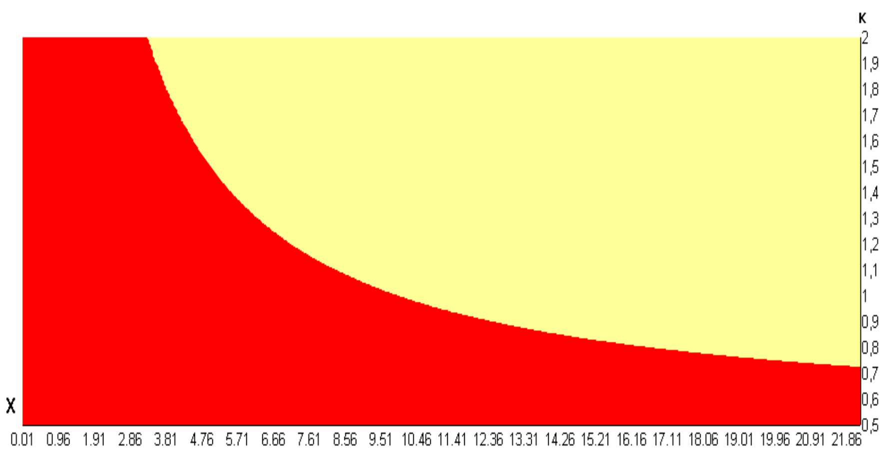

Figure 4: Gift making condition

The salient result emerging from Figures (2) and (3) is that there exists a critical value of κ, equal to one, above which the feasibility domain is empty. In words, asymmetric gift exchanges are infeasible when the weight attached to shame by the recipient exceeds the weight attached to social esteem or prestige by the gift-maker[8].

[8] If we believe David Hume for whom we are more elevated with the view of one below us, than mortified with the presence

This important result, which we had already obtained under the first specification of the social esteem function (see supra, Section 3.1), can be proved formally.

Denoting $\varphi = e_i/X$, conditions (23) and (24) can be rewritten thus:

$$\frac{\varphi+1}{2} \geq \kappa \text{ or } \varphi = e_i/X \geq 2\kappa - 1 \qquad (23')$$

$$4\kappa(\varphi X)X^{1/3} - X^{4/3} - 3(\varphi X)^{4/3}(2\kappa-1)^{2/3}$$

$$= 4\kappa\varphi - 3\varphi^{4/3}(2\kappa-1)^{2/3} - 1 \geq 0 \qquad (24')$$

It is then evident that, when $\kappa = \varphi = 1$, the two conditions hold with strict equality. This means that, when sensitivities of the two agents to social esteem or shame are identical ($\kappa = 1$), and when the parameters measuring such sensitivities are exactly equal to $X = \alpha_j^2/\beta_j$ ($e_i = e_j = X$), the two agents are just indifferent between entering into an asymmetric gift exchange relationship and remaining autarkic. It can then be shown that if κ is varied marginally around unit value while φ is adjusted so that the gift-making condition (23') stays satisfied with strict equality, the gift-receiving condition (24') is necessarily violated when $\kappa > 1$. By contrast, when κ is lowered marginally below one, and φ is adjusted in the aforementioned manner, condition (24') holds, yet is no more binding: agent i is just indifferent between making the gift and not making it while agent j strongly prefers the patronage relationship to autarky. Moreover, the conclusion that the domain where $\kappa > 1$ is infeasible holds *a fortiori* true if agent i is assumed to have a strong rather than a weak preference for patronage compared to autarky - (23') is not binding (see Appendix A.3 for the complete proof).

The above central result has a general validity in the sense that, whatever the value taken by the parameter γ, $\kappa = 1$ sets the upper limit of the feasible domain of asymmetric gift exchange (see Appendix A.4). The meaning becomes clearer when the overlaying of Figure (3) (depicting the domain of feasibility of gift-making from i's viewpoint) on Figure (4) (depicting the domain of gift acceptability by j) is borne in mind. What comes out then is that when j is more sensitive than i to social prestige or dignity considerations, he will accept a transfer from i only if his productivity is not too low so as to avoid incurring too much social shame.

of one above us (Hume, 1888: Book II, Section X, 390), such a circumstance is not likely to arise. Patronage, therefore, is intuitively plausible.

Yet, on the other hand, i is willing to make a (moderate) gift only if j is not too productive so that the latter's degree of dependence is sufficiently high. The two conditions turn out to be incompatible.

We are now in a position to state our first proposition:

Proposition 1 *An asymmetric gift exchange relationship can be established only if the importance attached to social shame by the recipient is smaller than the importance attached to social esteem by the donor. The potential donor is more likely to make a gift if he is more sensitive to social esteem considerations.*

We can now look at what happens in the domain located below the value $\kappa = 1/2$. In fact, as is evident from our above discussion around equation (17), the threshold value of κ is given by γ. Clearly, we are outside the domain where interior solutions exist. The first thing to note is that, in the area located exactly below the feasible domain of asymmetric gift exchange that we have depicted in Figure (5), an *a fortiori* argument shows that j will always accept a gift proposed by i: keeping the productivity parameter for j constant (measured along the horizontal axis), j will be more inclined to accept the gift made by i when his sensitivity to social shame is lower so that κ has a smaller value (bear in mind that e_i is fixed). Since j's cost of accepting the gift is lower, he now reduces his effort so as to attract a larger gift (at least up to the maximum level of gift compatible with the productive ability of i). The potential donor is obviously ready to comply since j's degree of dependence on him has now increased.

Where things are less clear is in the area located outside and to the right of the feasible domain but below the threshold $\kappa = \gamma$. There, indeed, the *a fortiori* argument can no more be used and, therefore, it is difficult to predict what j is going to do. There are actually two effects at work. On the one hand, even though his productivity is quite high, j is inclined to accept a gift since the social shame associated with it is low. On the other hand, j knows that there is an upper bound to the gift made by i: this implies that j is constrained in his strategic parasitic behaviour consisting of lowering his effort in order to attract a larger gift. We can no more be sure that the gift can be enlarged enough to persuade j to reduce his own production since the opportunity cost of doing so is high (his productivity is high). The interest of i is obviously affected insofar as social prestige depends on the extent of j's dependence on his donor's income. From (10') it can easily be checked that i will agree to make a gift only if $t_i > 0$, implying that $e_i > 2\alpha_j x_j$ when $\gamma = 1/2$. In words, j's productivity must not be too high (relative to i's sensitivity to social prestige) for the gift to be feasible[9].

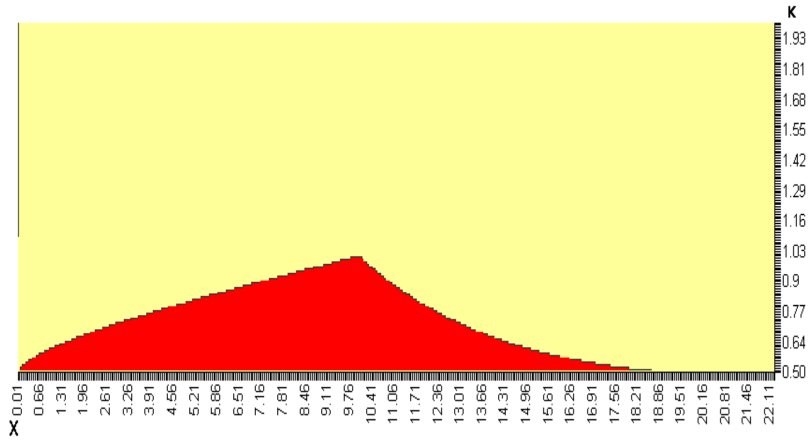

Figure 5: Feasibility of asymmetric gift exchange ($e_i = 10$)

Before considering some secondary results of our model, a final remark is in order: reciprocal gifts are impossible in our framework where social esteem and shame prevail. This directly follows from the fact that the critical value of κ (the ratio of esteem coefficients) above which an asymmetric transfer may not take place from agent i to agent j has been shown to be equal to one. This condition, which must be satisfied if a gift is to be made by agent i and accepted by agent j, is logically contradictory with the inverse condition that $1/\kappa < 1$, which is necessary for a gift to be made by agent j and accepted by agent i. Our analytical framework based on social esteem considerations, is, therefore, not appropriate to understand mechanisms of reciprocal, symmetrical, gift exchanges. As underlined in the first two sections, our concern is with asymmetrical social relationships in which an agent is subordinated to another agent and somehow accepts this situation.

5 Further results

Before concluding the paper, three interesting questions deserve to be answered. First, is it conceivable that patronage relationships are established between two agents of identical productivities (and effort costs)?

[9]Note that another area of indetermination coincides with the origin of the two axes where X is close to zero on the line $\kappa = \gamma$. As a matter of fact, when j produces almost no effort, it is quite likely that the gift proposed by i will correspond to the maximum feasible amount and at this level of the gift it cannot be taken for granted that j is willing to accept i's offer. It is obvious that this special case of quasi-complete parasitism can only arise if i's productivity is rather low.

Second, does aggregate output increases, decreases, or remain constant when autarky gives rise to patronage? Third, if the potential donor could choose the type of his client, what type would he prefer? Conversely, if the potential recipient could choose his patron, what type would he prefer? We address these three questions successively.

We can show that the answer to the first question is positive within our analytical framework (assuming that an interior solution exists). The easiest way is to construct an example in which agents i and j have similar levels of effort productivity and cost ($\alpha_i^2/\beta_i = \alpha_j^2/\beta_j = 9$). Assuming that $\kappa = e_j/e_i = 0.6$ and that $e_i = 10$, we find that the two conditions for the feasibility of asymmetric gift exchange, conditions (23) and (24), are satisfied. Moreover, we verify that an interior solution is obtained: as a matter of fact, the condition $\alpha_i^2/\beta_i > \alpha_i t_i$ is fullfiled, ensuring that agent i produces enough to have a positive amount of private consumption (see Appendix A.6 for a series of simulations confirming the above result). In fact, it is even possible that agent j, who accepts a gift made by agent i, has a (moderetaly) higher productivity.

This is an important result since the common view prevails that, for patronage to exist, there must be a dominating party, the patron, who is more productive than the dominated one, the client, typically because he is better endowed with wealth or productive resources. Our claim, here, is that a difference in social esteem coefficients is sufficient to produce patronage even between individuals of identical abilities. In other words, a person can accept an inferior position on the social ladder only because of a rather low sensitivity to the negative esteem that an humble position entails. It bears emphasis, however, that such a situation is a particular case that arises only for specific configurations of the esteem and productivity parameters. Hence our next proposition:

Proposition 2 *Assuming an interior solution, an asymmetric gift exchange relationship, in which income is traded against social esteem or political power, can sometimes arise between two agents endowed with the same effort productivities, or in a situation where the recipient has a (moderately) higher productivity than the gift-maker. What is required is that the client is not too sensitive to social shame while the patron pays enough attention to social esteem.*

Turning to the question of the variation of aggregate output between autarky and patronage, we must keep in mind that, provided $\kappa < 1$, interior solutions obtain only if $\kappa > 1/2$[10]. When this is true, we know already from (11) - $x_i + t_i = \alpha_i/2\beta_i$ - that the donor produces exactly the same amount of output under the two systems. As a consequence, to find out the overall output variation, we just have to look at the output response on the part of the potential donee.

His effort when receiving a gift is given by equation (17). Replacing γ by 1/2 in this expression and comparing it to his stand alone effort (which is equivalent to effort defined by equation (5)), we derive the following condition under which he reduces his level of effort after entering into a patron-client relationship:

$$1/2\Big(X(2e_j - e_i)e_i\Big)^{1/3} < X/2$$

Using the above-defined notations, this condition becomes:

$$(2\kappa - 1)\varphi^2 < 1 \tag{25}$$

Bearing in mind that $1/2 < \kappa \leq 1$, so that $0 < 2\kappa - 1 \leq 1$, it is evident that no upper bound for the φ parameter can be determined. The only clear result is that condition (25) always holds when $\varphi \leq 1$ or $e_i \leq X$. When $\varphi > 1$, the sign of the inequality is ambiguous and the variation of aggregate output cannot be known. Parasitism, in the sense of j relaxing his effort upon entering the asymmetric gift exchange relationship, is therefore a possibility. From (25) we can infer the conditions under which this parasitism *sensu lato* is more likely to occur. To begin with, bearing in mind that $\kappa = e_j/e_i$, it is evident that the lower e_j, the higher the likelihood that the above condition is satisfied. The interpretation is as follows: if the beneficiary of the gift has a low sensitivity to social shame, he will not be keen to exert much effort to avoid it and, therefore, will be more likely to relax upon entering a patron-client relationship.

Moreover, keeping in mind that $\varphi = e_i/X$ and $X = \alpha_j^2/\beta_j$, a relaxation of effort on the part of agent j is more likely to occur if, ceteris paribus, his productivity is higher. This is because, as we have seen earlier (see supra, section 3.2), productivity and effort are substitutes for the agent who benefits from the transfer. When the recipient's productivity increases, the utility of the donor decreases because the dependence of j is

[10] When a corner solution obtains (when $\kappa < 1/2$), it is unfortunately impossible to predict how overall production varies. What can be asserted, however, is that if j's productivity is sufficiently high, he will not constrain his effort compared to the autarkic solution, although he can still accept the gift if i is willing to make it.

reduced for a given amount of the gift. The donor responds by reducing the gift, and the beneficiary counters this move by relaxing his effort so as to increase his degree of dependence vis à vis the donor.

Finally, rewriting condition (25) as $1/X^2(2e_je_i - e_i^2) < 0$, and bearing in mind that $e_j \leq e_i$ in the feasible domain, it is apparent that an increase in e_i has the effect of relaxing the constraint. This means that the output of the beneficiary is more likely to decrease when the donor pays more attention to social esteem, meaning that the recipient exploits the donor's sensitiveness to esteem or status. It is interesting to notice that, in the feasibility domain, the above-noted indeterminacy of the sign of the partial derivative of x_j and $\alpha_j x_j$ with respect to e_i no more exists. Indeed, using (16) together with the definitions of X and κ, the equilibrium output of agent j can be written as $\frac{1}{2}(Xe_i^2(2\kappa - 1))^{1/3}$. The partial derivative of this expression with respect to e_i can be shown to be: $\frac{\partial \alpha_j x_j}{\partial e_i} = \frac{1}{3}\left(\frac{X}{e_i(2\kappa-1)^2}\right)^{1/3}(\kappa - 1)$. Since we know that the feasibility domain is such that $\kappa \in [1/2; 1]$, the sign of this expression is unambiguously negative. The underlying rationale is that, when agent i is more sensitive to social esteem, he is inclined to make a larger gift to agent j, and the latter responds by reducing his effort and output. This negative reaction is actually the net outcome of two effects running into opposite directions with the first effect outweighing the second one. On the one hand, enjoying a larger transfer, j is induced to exert less effort himself but, on the other hand, he is also eager to mitigate the increase in social shame that this larger transfer entails, and the way to do that is to increase his own level of effort.

We can now write the next proposition:

Proposition 3 *Assuming an interior solution, the establishment of an asymmetric gift exchange relationship is more likely to cause a reduction of output on the part of the recipient and, thereby, a reduction of total output if:* (*i*) *the recipient is less sensitive to social shame;* (*ii*) *his productivity is higher (or his effort cost is lower), though not too big; and* (*iii*) *the donor is more sensitive to social esteem.*

The last question concerns the ideal type of counterpart the client or the patron would choose if they were free to do it. Since our model is a two-agent model that does not allow for matching processes, we do not explore the question as to how potential donors and recipients can sort themselves out in the 'patronage market'.

It is evident from Figure 6 in Appendix A.7 that in the domain of interior solutions, the patron obtains maximum utility when dealing with extremely unproductive clients who, moreover, put a small weight on social shame (the minimum weight under the constraint that the clients accept the gift). Under these circumstances, indeed, the clients produce a minute output at equilibrium (see equation (19)) and, therefore, the donor can gain much social prestige even with a small gift. To the extent that the gift is made and accepted, this result remains true for values of e_j such that $\kappa < 1/2$, i.e. when we have corner solutions.

When considering the ideal patron from the viewpoint of a particular client, we optimize (24) with respect to the patron's characteristics. The first thing to note is that the amount of the gift made by the patron is independent of his productivity level so that the client is not concerned with this characteristic[11]. The second result is related to the esteem component of the patron's utility function. What we find is that e_i should equal e_j for the client's utility to be maximized. Notice, however, that when this is verified, there exists a single value of X compatible with an asymmetric gift exchange (see Figure (5)). Hence, when the ratio α_j^2/β_j of a particular client differs from this unique value, the ideal value of e_i is the one closest to e_j and compatible with an asymmetric gift exchange. The intuition behind this result becomes more evident when the strategic role of the agents' effort is borne in mind. It is when the patron's sensitivity to esteem is identical to his own that the client can strategically adjust his amount of effort in the way that yields the highest utility for him.

From these last results, it thus appears that the patron would like to match with a client as different as possible from himself in terms of sensitivity to social esteem, whereas the client would like to match with a patron as similar as possible to himself from the same standpoint. The immediate implication is that clients and patrons can never simultaneously team up with the ideal partner. This said, it must be emphasized that such a conclusion obtains only in the interior solution domain. Indeed, we cannot exclude the possibility that when $2e_j < e_i$ the client could look for a patron who has maximum sensitivity to social esteem: being inclined to parasitism, he would favour an esteem-sensitive patron who can make considerable gifts.

[11]We assume that the patron is productive enough so as to allocate a positive fraction of his production towards his own consumption. Below that level, indeed, the gift increases with the patron's productivity and we do not actually know what is the best productivity level from the viewpoint of the client.

6 Conclusion and application

The central result obtained in this paper is that an asymmetric gift exchange equilibrium can occur only if the importance attached to social shame by a recipient is smaller than that attached to social esteem by a donor. Moreover, an income transfer is more likely to be traded against social esteem, status, or power when the weight put on these attributes by the donor or patron is higher. Whether this condition is fulfilled may crucially hinge on the size and the composition of the audience witnessing the gift exchange. We also show that, depending on the configurations of the esteem coefficients of the two parties, the recipient's productivity may take on a rather wide range of values in the domain of feasibility of asymmetric gift exchange. Contrary to a commonly prevailing view, productivities might be identical between donor and donee. In fact, the productivity of the donee/client could even be (moderately) higher than that of the donor/patron. It is moreover possible, but not certain, that the beneficiary of the transfer will reduce his effort. This is more likely to occur if he is not too sensitive to social shame (or the donor is sensitive enough to social esteem) or if his productivity is sufficiently high (or his effort cost is sufficiently low).

Note that there is an interesting parallel between the above results and those obtained in Platteau and Seki (2007). In that paper, indeed, sensitivity to social esteem/shame, assumed to be identical for both agents, must exceed a minimum threshold if the most able agent is to agree to make a transfer and benefit from the associated local status effect while it must not be too high lest the less able agent should prefer autarky to receiving the transfer and suffering from social shame.

Aid relationships offer an interesting application of the theory. It has been shown empirically that the destination of bilateral aid flows can largely be explained by geopolitical considerations rather than by the characteristics of recipient countries that reflect need or strong absorption capacity (e.g., quality of governance). What is at work is a patronage logic whereby a dominating rich country provides aid to a poor, dominated country in exchange for the latter's allegiance, or subordination. Allegiance may take the form of voting in tandem with the donor country at the UN general assembly, or promoting its strategic interests in various circumstances (Lundborg, 1998; Schraeder et al., 1998; Alesina and Dollar, 2000).

Interestingly, not all developing countries enter into such patronage relationships with donor countries from the developed world. For some of them at least, in particular for big countries such as China and India, the cost of subordination seems to be too high to make them accept aid transfers (on a substantial scale). As convincingly argued by Janos (1982), self-esteem considerations also operate at the level of nations. What must be added is that all countries are not equally self-conscious or sensitive to a sense of national pride. This depends on the history of the nation which may largely determine the strength of its feelings of national identity, and the extent to which it wants to be respected by foreign entities. The fact that countries which are today reluctant to enter into aid dependence relationships may not have displayed such a reluctance in the past (think of China during the 1950s and India during the 1960s) attests that other variables are at play. Among these other variables are the levels of poverty and the need for aid on the part of the laggard countries - China and India, in the immediate post-war period, were of course much poorer and less technologically developed than they are today -, which in our model are reflected in the productivity parameters. Another consideration, which is not taken care of by our model, is the possible existence of competition among donor countries: India accepted large aid transfers from the United States and the Soviet Union partly because these two donor countries were rivalrous superpowers in the tense international context of the cold war. As a result, India did not become subordinated to either of them. By contrast, for ideological reasons, China accepted massive aid from the Soviet Union but no aid from the United States, as a result of which it became subordinated to the U.S.S.R. It is therefore not surprising that, after an escalating quarrel with its foreign benefactor, the aid relationship was disrupted in the summer of 1960 (Riskin, 1987, p.130-131).

Following the logic of our model, poor countries under continuous dependence *vis-à-vis* donor countries will produce less than they would under autarky if the cost of subordination is not acutely felt by them, and/or if some rich countries are eager to secure a clientele in the developing world. This is perhaps an important aspect of the aid dependence syndrome.

A Appendix

A.1 Logarithmic specification of the esteem component of utility

When the esteem component of the utility function is a logarithmic function of the percentage by which the gift made by i allows j to increase his consumption (i.e. the same argument that we use throughout the paper and for which we provide a justification in the text), the maximization problem of the gift giver is given by:

$$Max_{x_i,t_i}\left\{\alpha_i x_i - \beta_i(x_i+t_i)^2 + e_i ln\Big(\frac{\alpha_j x_j + \alpha_i t_i}{\alpha_j x_j}\Big)\right\}$$

The two FOCs are then:

$$\frac{\partial(.)}{\partial x_i} = 0 \Rightarrow \alpha_i = 2\beta_i(x_i+t_i)$$

$$\frac{\partial(.)}{\partial t_i} = 0 \Rightarrow \frac{e_i\alpha_i}{\alpha_j x_j + \alpha_i t_i} = 2\beta_i(x_i+t_i)$$

Combining these two conditions, we get:

$$\alpha_i t_i = e_i - \alpha_j x_j$$

Plugging this result in the second mover's (the recipient's) problem, we obtain:

$$Max_{x_j}\left\{e_i - \beta_j x_j^2 - e_j ln\Big(\frac{e_i}{\alpha_j x_j}\Big)\right\}$$

$$\frac{\partial(.)}{\partial x_j} = 0 \Rightarrow x_j = \sqrt{\frac{e_j}{2\beta_j}}$$

A.2 Corner Solutions when the esteem component of the utility function is convex or linear

A.2.1 Convexity: $\gamma = 2$

When $\gamma = 2$, meaning that the esteem component of the players' utility functions is convex, the F.O.C.s for the potential gift-giver (player i) are the following:

$$\frac{\partial U_i}{\partial x_i} = \alpha_i - 2\beta_i(x_i+t_i)$$

$$\frac{\partial U_i}{\partial t_i} = -2\beta_i(x_i+t_i) + \frac{2e_i\alpha_i(\alpha_j x_j + \alpha_i t_i)}{(\alpha_j x_j)^2}$$

After setting them both equal to zero and combining them, we can derive the equilibrium levels of effort of player i for own consumption and for gift transfer:

$$x_i = \frac{\alpha_i^2}{2\beta_i} - \frac{1}{\alpha_i}\Big[\frac{(\alpha_j x_j)^2}{2e_i} - \alpha_j x_j\Big]$$

$$t_i = \frac{1}{\alpha_i}\Big[\frac{(\alpha_j x_j)^2}{2e_i} - \alpha_j x_j\Big]$$

Replacing the best response of i in terms of gift transfer in the maximization problem of the recipient, j, and optimizing with respect to x_j, we obtain:

$$\frac{\partial U_j}{\partial x_j} = \frac{2\alpha_j^2 x_j}{2e_i}(2e_i - e_j) - 2\beta_j x_j \lesseqgtr 0 \Rightarrow \frac{2\alpha_j^2}{2e_i}(2e_i - e_j) - 2\beta_j \lesseqgtr 0$$

When the LHS is smaller to zero, we have the corner solution $x_j = 0$: agent j behaves in a parasitic fashion as a result of which agent i refuses to make a gift. On the other hand, when the LHS is positive, the would-be recipient has an incentive to *always* increase his effort, $x_j^o \to \infty$.

In the latter case, the gift-maker will dedicate all his effort to producing the gift: $t_i^o = \alpha_i/2\beta_i$ and $x_i = 0$.

A.2.2 Linearity: $\gamma = 1$

When $\gamma = 1$, the esteem component of the players' utility functions is linear.

The F.O.C.s for the potential gift-giver (player i) are the following:

$$\partial U_i(.)/\partial x_i = \alpha_i - 2\beta_i(x_i + t_i)^2 = 0$$

$$\partial U_i(.)/\partial t_i = -2\beta_i(x_i + t_i)^2 + \frac{\alpha_i e_i}{\alpha_j x_j} = 0$$

Combining these two conditions, we get that $\alpha_j x_j = e_i$. It is therefore impossible to determine the equilibrium values of x_i and t_i from the above two FOCs. What we have is a corner solution in which either agent i produces only for the sake of providing a gift to agent j ($e_i > \alpha_j x_j$), or in which i produces only for his own consumption ($e_i < \alpha_j x_j$).

A.3 Feasibility of asymmetric gift exchange: the restriction on κ

Let us vary κ marginally around unit value. It is immediately evident that condition (23') remains satisfied only if φ undergoes an even larger variation than κ. Knowing this, we must examine how condition (24') evolves. What we show is that the LHS of (24') becomes negative when $\kappa > 1$: the potential donee will not accept the gift if he is more sensitive to social shame than the donor is to social esteem or prestige. To prove this, let us denote the LHS of (24') by Ψ, bearing in mind that $\varphi = (2\kappa - 1)$ when (23') is binding: $\Psi = 4\kappa\varphi - 3\varphi^2 - 1$. Since $\varphi = 2\kappa - 1$, we infer that $d\varphi/d\kappa = 2$ when we vary κ marginally around the unit value. We can then write that:

$$d\Psi = 4\varphi d\kappa + (4\kappa - 6\varphi)2d\kappa$$

Or:

$$d\Psi/d\kappa = -8\varphi + 8\kappa = 8(1 - \kappa)$$

once we use again the property that $\varphi = 2\kappa - 1$. This expression is obviously negative when $\kappa > 1$:

$$d\Psi/d\kappa \lesseqgtr 0 \Leftrightarrow \kappa \gtreqless 1$$

When κ increases marginally above 1, Ψ will decrease and condition (24') is violated. On the other hand, when κ is lowered marginally below one, condition (24') is satisfied and is no more binding: agent j now strongly prefers the patronage relationship to autarky.

To complete the proof, we want to check whether the above result holds *a fortiori* when we assume that agent i strongly prefers patronage to autarky. Starting again from the benchmark case where $\kappa = \varphi = 1$, and adjusting φ to κ so that (23') is no more binding, we find that condition (24') can be satisfied only in the domain where $\kappa < 1$. The proof is as follows. We start from the situation where $\varphi = 2\kappa - 1$ and shift to a new situation where $\varphi > 2\kappa - 1$, or $\kappa < (\varphi + 1)/2$. We, therefore, assume that $d\varphi = 2\delta d\kappa$, with $\delta > 1$. We can then write:

$$d\Psi = 4\varphi d\kappa + \Big(4\kappa - 6\varphi\Big)2\delta d\kappa$$

so that

$$\frac{d\Psi}{d\kappa} = 4\varphi(1 - 3\delta) + 8\delta\kappa$$

For this expression to be positive, we must have that $\kappa \geq \frac{\varphi}{2}\big(3 - \frac{1}{\delta}\big)$. Since $\delta > 1$ and, hence, $(3 - \frac{1}{\delta}) > 2$, κ exceeds φ to an even larger extent than in the vicinity of $\kappa = 1$, where (23') continues to be binding. We now have the following two conditions: $\kappa > \varphi$ and $\kappa < (\varphi+1)/2$, which can never be simultaneously satisfied if $\kappa \geq 1$. On the other hand, if $\kappa < 1$, the two above conditions can possibly be satisfied depending on the values of the two parameters (the gap between κ and φ must not be too large).

A.4 Feasibility of asymmetric gift exchange: extending the results to any $\gamma < 1$

A preliminary step for the construction of the proof consists in rewriting equation (20) as well as the condition granting that (22) is positive using the more compact notations of $\kappa = e_j/e_i$, $X = \alpha_j^2/\beta_j$ and $\varphi = e_i/X$. Take first the condition that ensures the positivity of (22):

$$\left(\frac{\alpha_j^2(e_j - \gamma e_i)}{(1-\gamma)2\beta_j\gamma e_i^2}\right)^{\frac{1}{\gamma-2}} \geq 1$$

After replacing for κ, X and φ, this expession becomes:

$$\big(\kappa - \gamma\big) \geq \varphi 2\gamma(1-\gamma) \tag{26}$$

Proceeding in the same fashion for equation (20), we obtain:

$$\Psi = \big(\kappa\varphi - 1/4\big)\varphi^{\frac{2}{\gamma-2}} - \frac{\big(\kappa-\gamma\big)^{\frac{2(\gamma-1)}{\gamma-2}}}{\big(2\gamma(1-\gamma)\big)^{\frac{\gamma}{\gamma-2}}}\Big(1 + \frac{\gamma}{2(1-\gamma)}\Big) \geq 0 \tag{27}$$

A first point to notice is that when $\kappa = 1$ and that condition (26) is satisfied with equality, Ψ is also equal to zero.

To prove the desired result we proceed in the following manner. We first take the total differentials of both conditions and set $d\gamma = 0$. We then assume that (26) is satisfied with equality and show that if we modify the parameters' values such that (26) continues to remain true with equality, when $\kappa > 1$ condition (27) is violated.

The differential of condition (26) yields:

$$\frac{d\varphi}{d\kappa} \leq \frac{1}{2\gamma(1-\gamma)} \tag{28}$$

As for the differential of condition (27) it is given by:

$$d\Psi = \left[\kappa\varphi^{\frac{2}{\gamma-2}} + \frac{2}{\gamma-2}\varphi^{\frac{4-\gamma}{\gamma-2}}(\kappa\varphi - 1/4)\right]d\varphi + \left[\varphi^{\frac{\gamma}{\gamma-2}} - \Big(\frac{\kappa-\gamma}{2\gamma(1-\gamma)}\Big)^{\frac{\gamma}{\gamma-2}}\right]d\kappa \tag{29}$$

For condition (27) to remain true when varying φ and κ (ensuring that $d\Psi > 0$), we must have that:

$$\frac{d\varphi}{d\kappa} \geq \frac{\big(\frac{\kappa-\gamma}{2\gamma(1-\gamma)}\big)^{\frac{\gamma}{\gamma-2}} - \varphi^{\frac{\gamma}{\gamma-2}}}{\kappa\varphi^{\frac{2}{\gamma-2}} + \frac{2}{\gamma-2}\varphi^{\frac{4-\gamma}{\gamma-2}}(\kappa\varphi - 1/4)} \tag{30}$$

Our aim is to show the impossibility that equations (28) and (30) are simultaneously verified when $\kappa > 1$. We begin by assuming that equation (28) holds with equality and that $\kappa > 1$. Equation (30) can then be written as:

$$\frac{1}{2\gamma(1-\gamma)} \geq \frac{\left(\frac{\kappa-\gamma}{2\gamma(1-\gamma)}\right)^{\frac{\gamma}{\gamma-2}} - \varphi^{\frac{\gamma}{\gamma-2}}}{\kappa\varphi^{\frac{2}{\gamma-2}} + \frac{2}{\gamma-2}\varphi^{\frac{4-\gamma}{\gamma-2}}(\kappa\varphi - 1/4)} \tag{31}$$

Moreover, when condition (26) holds with equality, (31) becomes:

$$\frac{\left(\frac{\kappa-\gamma}{2\gamma(1-\gamma)}\right)^{\frac{2}{\gamma-2}}\gamma(\kappa-1)(1+\kappa-\gamma)}{2\gamma(1-\gamma)(\gamma-2)(\kappa-\gamma)} \geq 0 \tag{32}$$

As can be easily verified, when $\kappa > 1$ the above condition is violated. This result, combined with the continuity of both conditions (28) and (30) in φ and in κ completes our proof that an asymmetric gift exchange is not feasible in the domain where $\kappa > 1$.

A.5 Optimal characteristics for gift acceptance

The individual whose utility is the highest when receiving a gift is the one for whom the following expression, which is derived from (24), is¡ maximized with respect to X:

$$f(X) = 4\kappa e_i - X - 3e_i^{4/3}\Big(\frac{(2\kappa-1)^2}{X}\Big)^{1/3}$$

Taking the first order w.r.t. X, and setting it equal to zero, we obtain that $X^* = e_i(2\kappa-1)^{1/2} = \Big(e_i(2e_j - e_i)\Big)^{1/2}$. This value does maximize $f(X)$ because $f^{'}(X) > 0$ and $f^{''}(X) < 0$. Plugging this value f(X), we have that :

$$f(X^*) = 4\kappa e_i - e_i(2\kappa-1)^{1/2} - 3e_i(2\kappa-1)^{1/2} = \kappa - (2\kappa-1)^{1/2}$$

We can then infer that:

$$f(X^*) \geq 0 \Rightarrow \kappa^2 - 2\kappa + 1 \geq 0$$

which is true $\forall\kappa \geq 0$. We can, therefore, conclude that values of α_j and β_j always exist such that, if j receives a gift, he would accept it.

A.6 Simulation results for symmetric productivity parameters

Up to here we have defined $X = \alpha_j^2/\beta_j$. Let us now index X so that $X_j = \alpha_j^2/\beta_j$ and $X_i = \alpha_i^2/\beta_i$.

Here below, we provide the reader with a series of simulations of efforts applied by agent i towards own consumption and towards gift transfer, and of effort applied by agent j, under specific conditions in which both agents are equally productive ($X_i = X_j$). It is immediately evident that agent i may make positive gifts to agent j in the presence of identical effort productivities.

e_i	e_j	κ	α_i	β_i	α_j	β_j	X_i	X_j	$\alpha_i t_i$	$\alpha_i x_i$	$\alpha_j x_j$	$\alpha_j x_j + \alpha_i t_i$
10	9	0.9	1	0.05	1	0.05	20	20	6.5	3.5	2.71	9.21
10	7	0.7	1	0.05	1	0.05	20	20	9.45	0.55	2.15	11.6
5	4	0.8	1	0.1	1	0.1	10	10	2.47	2.53	1.55	4.02
5	3	0.6	1	0.1	1	0.1	10	10	4.72	0.28	1.08	5.8
1	0.8	0.8	1	1.25	1	1.25	0.8	0.8	0.25	0.15	0.39	0.64
1	1	1	1	2	1	2	0.5	0.5	0.23	0.02	0.4	0.63
0.5	0.4	0.7	1	1.67	1	1.67	0.6	0.6	0.01	0.29	0.25	0.25
0.5	0.4	0.8	1	2.5	1	2.5	0.4	0.4	0.01	0.19	0.25	0.25

A.7 The patron's utility in perspective.

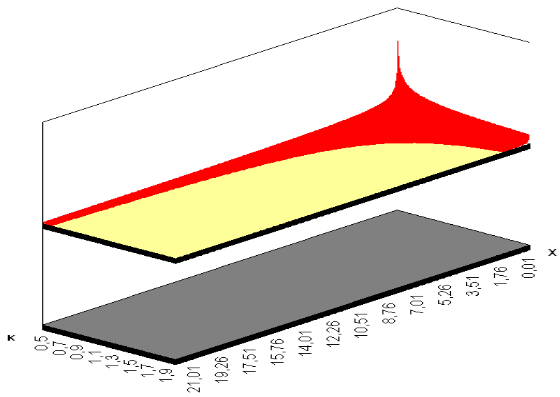

Figure 6: Patron's utility in the region of feasibility ($e_i = 5$)

References

Akerlof, G. (1982): "Labor Contracts as Partial Gift Exchange," *Quarterly Journal of Economics*, 87 (4), 543–569.

Alesina, A., and D. Dollar (2000): "Why Give Foreign Aid to Whom and Why," *Journal of Economic Growth*, 5, 33–63.

Alexander, P. (1982): *Sri Lankan Fishermen -Rural Capitalism and Peasant Society.* Canberra: Australian National University Press.

Andreoni, J. (1990): "Impure Altruism and Donations to Public Goods: a Theory of Warm-Glow Giving," *Economic Journal*, 100, 464–477.

Aoki, A. (2001): *Toward a Comparative Institutional Analysis.* The MIT Press, Cambridge, Msstts & London.

Barham, V., R. Boadway, M. Marchand, and P. Pestieau (1997): "Volunteer Work and Club Size: Nash Equilibrium and Optimality," *Journal of Public Economics*, 65, 9–22.

Belshaw, C. (1965): *Traditional Exchange and Modern Markets.* Prentice-Hall, Englewoods Cliffs, NJ.

Bernheim, D., S. A., and L. Summers (1985): "The Strategic Bequest Motive," *Journal of Political Economy*, 93 (6), 1045–1076.

Blau, P. (1964): *Exchange and Power in Social Life.* John Wiley and Sons.

Bourdieu, P. (1990): *The Logic of Practice.* Stanford University Press, Stanford, Cal.

Breman, J. (1974): *Patronage and Exploitation - Changing Agrarian Relations in South Gujarat.* University of California Press, Berkeley, CA.

Brennan, G., and P. Pettit (2005): *The Economy of Esteem - An Essay on Civil and Political Society.* Oxford University Press, Oxford.

Carmichael, H. L., and W. B. MacLeod (1997): "Gift Giving and the Evolution of Cooperation," *International Economic Review*, 38 (3), 485–509.

Clark, A. E., and A. J. Oswald (1998): "Comparison-Concave Utility and Following Behaviour in Social and Economic Settings," *Journal of Public Economics*, 70 (1), 133–155.

Coate, S., and M. Ravallion (1993): "Reciprocity Without Commitment: Characterization and Performance of Informal Insurance Arrangements," *Journal of Development Economics*, 40 (1), 1–24.

Colin, R. (2004): *Kénédegou - Au Crépuscule de l'Afrique Coloniale*. Presence Africaine, Paris.

Cox, D., and M. R. Rank (1992): "Inter-Vivos Transfers and Intergenerational Exchange," *The Review of Economics and Statistics*, 74 (2), 305–314.

Cox, D., and O. Stark (2005): "Bequests, Inheritances and Family Traditions," CPR WP 2005-09, Center for Retirement Research, Boston College, MA.

Dercon, S., and P. Krishnan (2000): "In Sickness and in Health: Risk-Sharing within Households in Ethiopia," *Journal of Political Economy*, 108 (4), 688–727.

Ekeh, P. (2004): *Individuals' Basic Needs & the Limits of Democratization in Africa*. chapter 2, pages 22-37, in *Ethnicity & Democracy in Africa*, B. Berman, D. Eyoh and W. Kymlicka eds, Oxford: James Currey and Athens: Ohio University Press.

Epstein, T. S. (1968): *Capitalism, Primitive and Modern - Some Aspects of Tolai Economic Growth*. Australian University Press, Canberra.

Evans-Pritchard, E. E. (1940): *The Nuer: A Description of the Modes of Livelihood and Political Institutions of a Nilotic People*. Clarendon Press, Oxford.

Fafchamps, M. (1992): "Solidarity Networks in Preindustrial Societies: Rational Peasants with a Moral Economy," *Economic Development and Cultural Change*, 41 (1), 147–174.

Fehr, E., K. G., and A. Riedl (1998): "Gift Exchange and Reciprocity in Competitive Experimental Markets," *European Economic Review*, 42 (1), 1–34.

Fehr, E., and S. Gaechter (2000): "Fairness and Retaliation: The Economics of Reciprocity," *Journal of Economic Perspectives*, 14 (3), 159–181.

Fessler, D. M. T. (2001): *The Role of Shame and Self-Esteem in Risk-Taking*pp. 191–214. in Gigerenzer, G. and R. Selten (eds), The MIT Press, Cambridge, Mssts, and London.

Finney, B. R. (1972): *Big-Men, Half-Men and Trader-Chiefs: Entrepreunial Styles in Australian New Guinea and French Polynesia*pp. 114–130. in Epstein, T.S. and D.H. Penny (eds), C. Hurst & Company, London.

Frank, R. (1985): *Choosing the Right Pond: Human Behavior and the Quest for Status*. Oxford University Press, Oxford.

——— (1989): *Passions Within Reason: The Strategic Role of Emotions*. W.W.Norton & Company, New York.

Fremling, G. M., and R. A. Posner (1999): "Market Signalling of Personal Characteristics," University of Chicago Discussion Paper.

Fudenberg, D., and J. Tirole (1991): *Game Theory*. MIT Press, Cambridge, Mass.

Gaechter, S., and E. Fehr (1999): "Collective Action as Social Exchange," *Journal of Economic Behavior and Organization*, 39, 341–369.

Gaspart, F., and E. Seki (2003): "Cooperation, Status Seeking and Competitive Behaviour," *Journal of Economic Behaviour and Organization*, 51 (1), 51–77.

Gregory, C. (1982): *Gifts and Commodities*. Academic Press, Cambridge.

Harbaugh, W. (1998a): "The Prestige Motive for Making Charitable Transfers," *American Economic Review*, 88, 277–282.

——— (1998b): "What do Donations Buy? A Model of Philanthropy Based on Prestige and Warm-Glow," *Journal of Public Economics*, 67, 269–284.

Hoddinott, J. (1992): "Rotten Kids or Manipulative Parents: Are Children Old Age Security in Western Kenya?," *Economic Development and Cultural Change*, 40, 545–566.

Holländer, H. (1990): "A Social Exchange Approach to Voluntary Cooperation," *The American Economic Review*, 80 (5), 1157–1167.

Holmstrom, B., and P. Milgrom (1991): "Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design," *Journal of Law, Economics and Organization*, 7, 24–52.

Homans, G. C. (1961): *Social Behavior: Its Elementary Forms*. Harcourt, Brace & World, New York.

Hume, D. (1888 (second edition 1978)): *A Treatise of Human Nature*. Clarendon Press, edited by L.A. Selby-Bigge, Oxford.

Janos, A. C. (1982): *The Politics of Backwardness in Hungary, 1825-1945*. Princeton University Press, Princeton, New Jersey.

Johnson, P., D. K. Levine, and W. Pesendorfer (2001): "Evolution and Information in a Gift-Giving Game," *Journal of Economic Theory*, 100, 1–21.

Kimball, M. S. (1988): "'Farmers' Cooperatives as Behavior Toward Risk," *American Economic Review*, 78 (1), 224–232.

Kolm, S. C., and J. M. Y. (eds) (2006): *Handbook of the Economics of Giving, Altruism and Reciprocity, 2 Vols,*. Amsterdam: Elsevier and North-Holland.

Laferrère, A., and F. C. Wolff (2006): *Microeconomic Models of Family Transfers*. in Kolm, S.C. and J.M. Ythier, *Handbook of the Economics of Giving, Altruism and Reciprocity*, vol.2, pp. 889-969, Amsterdam: Elsevier and North-Holland.

Levi-Strauss, H. (1969): *The Elementary Structures of Kinship*. Social Science Paperbacks (Revised Edition), London.

Ligon, E. J. P. T., and T. Worall (2002): "Informal Insurance with Limited Commitment: Theory and Evidence from Village Economies," *Review of Economic Studies*, 69 (1), 209–244.

Lundborg, P. (1998): "Foreign Aid and International Support as a Gift Exchange," *Economics and Politics*, 2, 127–141.

Malinowski, B. (1922): *Argonauts of the Western Pacific -An Account of Native Entreprise and Adventure in the Archipelagoes of Melanesian New Guinea*. Routledge (Reprinted 1999), London.

Mauss, M. (1925 (reprinted 1990)): *The Gift*. Routledge, London.

Morduch, J. (1999): "Between the Market and the State: Can Informal Insurance Patch the Safety Net?," *World Bank Research Observer*, 14 (2), 187–207.

Offer, A. (1997): "Between the Gift and the Market: The Economy of Regard," *Economic History Review*, 50 (3), 450–476.

Paxson, C. (1993): "Consumption and Income Seasonality in Thailand," *Journal of Political Economy*, 101 (1), 39–72.

Pitt-Rivers, J. (1954): *The People of Sierra*. Weidenfield and Nicolson, London.

Platteau, J. P. (1991): *Traditional Systems of Social Security and Hunger Insurance: Past Achievements and Modern Challenges*pp. 112–170. Clarendon Press, Oxford.

——— (1995a): "A Framework for the Analysis of Evolving Patron-Client Ties in Agrarian Economies," *World Development*, 23 (5), 767–786.

——— (1995b): "An Indian Model of Aristocratic Patronage," *Oxford Economic Papers*, 47 (4), 636–662.

Platteau, J. P., and E. Seki (2007): "Heterogeneity, Social Esteem, and Feasibility of Collective Action," *Journal of Development Economics*, 83, 302–325.

Polanyi, K. (1944): *The Great Transformation*. Rinehart, New York.

——— (1968): *Primitive, Archaic, and Modern Economics*. Doubleday, New York.

Riskin, C. (1987): *China's Political Economy - The Quest for Development since 1949*. Oxford University Press, Oxford.

Robben, H., and T. Verhallen (1994): "Behavioral Costs as Determinants of Cost Perception and Preference Formation for Gifts to Receive and Gifts to Give," *Journal of Economic Psychology*, 15, 333–350.

Sahlins, M. (1960): *Political Power and the Economy in Primitive Society*Cromwell, New York.

——— (1974): *Stone Age Economics*. Aldine, Chicago.

Sahlins, M. D. (1963): "Poor Man, Rich Man, Big-Man, Chief: Political Types in Melanesia and Polynesia," *Comparative Studies in Society and History*, 5, 285–303.

Schraeder, P. J., B. Taylor, and S. W. Hook (1998): "Clarifying the Foreign Aid Puzzle: A Comparison of American, Japanese, French, and Swedish Aid Flows," *World Politics*, 50 (2), 294–323.

Schwartz, B. (1967): "The Social Psychology of the Gift," *The American Journal of Sociology*, 73 (1), 1–11.

Scott, J. (1976): *The Moral Economy of the Peasant*. Yale University Press, New Haven, CT.

Townsend, R. M. (1994): "Risk and Insurance in Village India," *Econometrica*, 62 (3), 539–591.

Udry, C. (1994): "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria," *Review of Economic Studies*, 61, 495–526.

Van de Ven, J. (2002): "The Demand for Social Approval and Status as a Motivation to Give," *Journal of Institutional and Theoretical Economics*, 158 (3), 464–482.

Wintrobe, R. (1998): *The Political Economy of Dictatorship*. Cambridge University Press, Cambridge.