

# **The invisible hand vs. moral sentiments: Social relations and the market economy**

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## **Abstract**

Individuals' well-being does not only depend on the amount of market-traded goods and services, but also on stable and satisfying social relationships. Both the acquisition of goods and the establishment and maintenance of relationships (the production of relational goods) require the use of scarce resources, such that a trade-off arises. As soon as these two assumptions are accepted, both spheres of action have to be seen as being closely interrelated, since the efficiency of market-mediated trade defines the opportunity-cost for investing in social relationships. The question is, whether the dynamic of the market-system gradually pulls resources out of social relations by increasing opportunity costs, and, if this is the case, what are the implications of this evolution in terms of welfare.

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## 1. Introduction

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For economists it is a truism that most of the interactions between human beings can be described as an exchange of resources. This is certainly the case for those interactions, which take place within the framework of markets. However, as a brief introspection reveals, buying and selling on contractually fixed terms of trade is not the only way to profitably employ one's own resources. Apart from consuming one's endowments straight away instead of selling them on the market, considerable portions of time, effort, attention and mental capacities are absorbed by interacting with other individuals outside the marketplace. We organize our family-lives, undertake various activities with our friends, have a chat with our neighbours, get involved with sports clubs or attend meetings of political or religious associations et cetera. Besides of being sellers and suppliers, we are spouses, parents, citizens, colleagues, neighbours, volunteers and take a number of other roles.

In the present paper, these activities are denoted as social activities to distinguish them from market-transactions. If it is true that social activities require the use of scarce resources, then they cause opportunity costs since the same resources could have been sold at the market. Hence, in order to be undertaken by rational individuals, social activities have to yield utility to those, who undertake them. Concerning the question of where this utility comes from, the exchange-paradigm re-enters the scenery: An important strand of sociological literature characterizes "*social behavior as an exchange of goods, material goods but also non-material ones, such as the symbols of approval or prestige. Persons that give much to others try to get much from them, and persons that get much from others are under pressure to give much to them.*"<sup>1</sup> Economics absorbed this approach by characterizing social exchange as a reciprocal exchange of gifts, where the term gift should be understood without any connotation of the giver's altruism for the receiver.<sup>2</sup>

As, on the one hand, making gifts in a social relation is a way for the giver to receive gratifying counter-gifts, whereas on the other hand making gifts is costly in terms of market-income forgone, we have two interrelated modes of transferring valuable resources: the market and social exchange. The connection between the two modes originates from the fact that the market-value of resources defines the opportunity-costs of employing them in

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<sup>1</sup> HOMANS [1958, p.606]; other representatives of the social exchange approach are for instance BLAU [1964] and COLEMAN [1990].

<sup>2</sup> AKERLOF [1982]; a series of surveys on the economics of gift-giving can be found in KOLM and MERCIER-YTHIER [2006].

social relations. Observing that markets provide strong incentives for making the most valuable use of resources, leads us to the central problem of this paper. The question is, whether the dynamic of the market–system gradually pulls resources out of social relations by increasing opportunity costs, and, if this is the case, what are the implications of this evolution in terms of welfare.

To explore this question, we proceed as follows: In the next section we briefly review the related literature. The model is described in the third section. The fourth section derives some properties of individuals' reaction functions and indifference curves. Equilibria are analysed in greater detail in section five, while the concluding section presents some implications of our analysis for economic policy.

## 2. Related literature

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There are several strands of literature which are related to this topic. Firstly, there are two papers by ANTOCI ET AL. [2005, 2007] in which the dynamic co–evolution of the market–economy and social relations is studied. Individuals choose between using resources for social interaction, thereby contributing to the stock of social capital, which increases the utility that can be derived from future social interaction. Or they allocate resources to market–oriented production, where part of the output is re–invested to increase the stock of productive capital. We deviate from this approach in several ways: In order to analyse, how an increase in the efficiency of the market–mechanism affects individual's choices, we cut off the influence of the latter on the former i.e. we ignore the development of the stock of productive capital. Modeling the productivity of resources used in market–transactions as an exogenous variable allows us to perform comparative–static analyses with respect to the equilibrium values of individuals' behavioral variables and the welfare properties of equilibria.<sup>3</sup> The second modification consists in the use of a fairly general utility function, whereas ANTOCI ET AL. use logarithmic utility to keep the dynamics of their model tractable. As it turns out, some interesting results of our model depend on the signs of cross–effects, which are fixed as soon as logarithmic utility is assumed. Finally, we also disregard the endogenous dynamics of social relations (i.e. the investment in and the

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<sup>3</sup> Treating the performance of the market–system as an exogenous variable similarly excludes all considerations of how social relations might affect the functioning of market transactions e.g. by using trust to alleviate problems of opportunistic behaviour (see for instance GRANOVETTER [1985])

use of social capital) and use a purely static setting instead. A closely related (static) approach is presented by CORNEO [2002], who, similar to ANTOCI ET AL., derives and compares multiple co-existing equilibria, but does not examine how these equilibria are affected by an increase in market-performance.

All these publications more or less explicitly share the view, that the goods transferred in social exchange are qualitatively different from those traded in the market. This view is expressed most clearly in UHLANER [1989] and GUI [2000], who view individual contributions to a social relation as inputs to the production of ‘relational goods’, “*which cannot be acquired by an isolated individual. Instead, these goods arise as a function of a relationship with others. The relational goods can only be ‘possessed’ by mutual agreement that they exist after appropriate **joint actions** have been taken by a person and non-arbitrary others.*”<sup>4</sup> This being the case, the question arises, if market goods and relational goods are substitutes to each other or if they are complements. The implications of assuming substitutability (like in all publications mentioned above) can be seen most clearly in KRANTON [1996] and VAN DE KLUNDERT AND VAN DE VEN [1999]. In their models, each mode of transfer suffers from a specific deficiency: Finding a trading partner in markets is costly, while partners to a social exchange have to make sure that an incentive-compatibility constraint is met. Given this setting, an increase in the efficiency of markets inevitably shifts exchange activities from social relations to market-exchange, relational goods are substituted by market goods. As it turns out below, this is not necessarily the case, if both types of goods are complements to each other.

In the tradition of the comparative analysis of economic systems, KOLM [1994] analyses the implications of the assumption, that individuals’ utilities not only depend on the amounts of goods consumed, but also on the mode of transfer by which goods are exchanged between them. These studies contain an impressive variety of illuminative thoughts on why modes of transfers affect individual welfare apart from their allocative qualities e.g. the value of a book received as a gift from a close friend is different from the value of getting the same book handed over by a bookseller. However, KOLM analyses the consequences of transacting within a given mode of transfer, where there is no possibility to transfer a given resource either via reciprocal exchange or via the market system. Contrary to this, in our model individuals make a decision on the mode of transfer to be used.

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<sup>4</sup> UHLANER [1989], p. 254, emphasis added.

### 3. The Model

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Each individual  $i$  owns a fixed endowment of resources such as time, effort or attention, which can be employed in the marketplace or in social relations. As a shorthand notation we will relate to market activities ( $m_i$ ) and social activities ( $s_i$ ). With the total resource endowment being normalized to one we obtain the budget constraint

$$(1) \quad m_i + s_i = 1.$$

As  $0 \leq m_i \leq 1$ , the variable  $m_i$  measures an individual's degree of integration into the market economy. Hence,  $m_i$  and  $s_i$  should not be interpreted as the amounts of resources in a strictly literal sense. What we are concerned with is an individual's fundamental long-term decision on her lifestyle where a lifestyle is defined by the weights which are ascribed to market activities and social activities respectively in an individual's choice of behavior.

Both market activities and social activities yield payoffs. The material payoff from market integration is income  $y_i$ . The market process is viewed as a black box which transforms lifetime, effort and attention into income according to a simple linear relationship

$$(2) \quad y_i = \theta_i m_i, \text{ where we assume } \theta_i > 0.$$

In the subsequent analysis we are going to study the influence of market performance on social relations where the former is represented by the parameter  $\theta_i > 0$ . An increase in market performance is expressed as an increase in  $\theta_i$ , which in turn leads to an increase in income. Market performance can be improved by various developments such as a reduction in production costs due to technical progress, an increase in competition caused by the entrance of new firms, reductions in transaction costs, a more comprehensive definition of property rights or by economic policy measures which reduce allocational distortions. It can also come about by the opening of new markets or by the integration of existing markets as it is the case in course of the process of globalization. The market performance parameter is indexed by  $i$  in order to express the idea that individuals possibly profit from these developments by different amounts. It may even be true that some groups suffer a loss (their  $\theta_i$  decreases) e.g. by the devaluation of their human capital due to technical progress which leads to a substitution of human capital by other factors of production. As a shorthand notation we refer to an increase in  $\theta_i$  as economic growth.

Social activities do not yield a monetary payoff but affect utility directly by  $u_i(s_i, s_j, y_i)$  where  $s_j$  denotes the amount of the social activities exerted by the agent  $j$  with whom individual  $i$  interacts. The two-player setting is chosen as it represents the most basic form of a social relationship. We assume that income  $y_i$  is used up completely to buy goods supplied in the marketplace. Hence,  $y_i$  influences utility, with  $u_i(\cdot)$  indicating the utility attained, after a given amount of income has been optimally allocated to the consumption of market-goods, i.e. for given values of  $s_i$  and  $m_i$ .

Besides positive marginal utility of income the utility function is characterized by two properties: First of all, players enjoy each other's social behaviour:

$$(3) \quad \frac{\partial u_i}{\partial s_j} > 0 \quad \forall s_i.$$

This assumption captures the following ideas: Undoubtedly, one of the most fundamental features of a social relation is that individuals mutually affect each other outside of the market system. This kind of interdependence ranges from simply deriving (dis)utility from the way one's counterpart behaves to the more strategic type of actions deliberately taken in order to harm or to benefit the other player or to elicit a certain kind of desirable response in a leader-follower setting. In general, the externalities arising in a social interaction may be both positive or negative. I may enjoy my neighbour's willingness to lend me a helping hand or I may be annoyed by his or her habit of telling the same old stories again and again. Hence, we do not view social relations as being driven by overall harmony, altruism and mutual understanding. In fact in what follows we model the decision to engage in social interaction as purely and narrowly motivated by selfish considerations. This in turn is the main justification for concentrating on positive externalities. If the benefits did not overcompensate for the negative side-effects, an individual could at least in many cases give up to interact with the counterpart and refuse to take part in shared activities thus terminating the relation.

We should briefly comment on why player  $i$  is assumed to derive utility from  $s_j$  for all values of  $s_i$ . After all, it seems to be a bit odd that  $i$  should benefit from  $j$ 's pro-social behaviour  $s_j > 0$ , even if the former has no contact at all ( $s_i = 0$ ) with the latter. If you are invited to a barbecue by your neighbour, you have to spend some time and go there in order to be able to enjoy it. This is the view taken by UHLANER [1989], GUI [2000] and ANTOCI

ET AL. [2007]. Instead of contradicting this approach, the assumption made in (3) in fact enlarges it by ascribing a positive utility to the mere fact that somebody else behaves socially towards oneself. Being invited to a party is beneficial, even if for some reason or another the invitation is declined. Having friends, who are willing to lend a helping hand is enjoyable, even if their helpfulness is not made use of. From this point of view, a positive marginal utility of  $s_j$  at  $s_i = 0$  can be understood as the option value of a social relation.

The second feature of the utility function expresses the reciprocity of social relations: The more player  $j$  behaves socially towards player  $i$ , the greater is the latter's marginal utility from acting in favour of the former:

$$(4) \quad \frac{\partial^2 u_i}{\partial s_i \partial s_j} > 0 \text{ such that } \frac{\partial u_i}{\partial s_i} \begin{cases} = 0 \text{ for } s_j = 0 \\ > 0 \text{ for } s_j > 0 \end{cases}$$

This assumption reflects the idea of reciprocity as analysed for instance in KOLM [2006]. Individual  $i$ 's social behaviour is intended to benefit player  $j$  in response to the beneficial action  $j$  took towards  $i$ . The motives for  $i$ 's counter-gift may encompass purely altruistic feelings of fairness, gratefulness or sympathy for  $j$  or the impurely altruistic desire to avoid moral indebtedness, to experience a 'warm glow'<sup>5</sup> or the giver's intention to generate enjoyable feelings of gratitude, sympathy or indebtedness on part of the receiver as it is analysed by HOLLÄNDER [1990]. They may alternatively be based on norms of fairness<sup>6</sup>, respect and politeness, where, for the purpose of the present paper, it makes no difference if these norms are internalized by the benefactor or if violating these norms entails external social sanctions.

Assumption (4) says, that player  $i$ 's motivation to socially interact with player  $j$  increases as the latter spends more resources on her social relationship with  $i$ . It can similarly be interpreted as describing the fact that a reduction in  $s_j$  is more harmful to player  $i$  when  $s_i$  is large than when it is small.<sup>7</sup>

<sup>5</sup> The dichotomy between pure and impure altruism is due to ANDREONI [1990]. A somewhat different distinction is made by KOLM [2000], who differentiates between conditional altruism ('Giving if others give') and unconditional altruism ('Giving, no matter what others do'). This corresponds to our assumption (4), which expresses conditional altruism by referring to the marginal propensity to give and its dependence on the behaviour of the counterpart.

<sup>6</sup> AKERLOF [1982]

<sup>7</sup> ANTOCI ET AL. [2007, p. 134]

Social relations consisting in reciprocal gift–giving seem to be conceptually close to market–mediated transactions since in both cases goods and services are transferred between individuals. The decisive difference between both modes of exchange lies in the fact that the parties to a market exchange give away their resources in order to meet their contractual obligations, whereas the willingness to bear the opportunity cost of social activities derives from a feeling of being obliged to reciprocate a favour or the desire to make a gift as it is expressed in the cross–effect in the utility function noted in (4). Whereas buyers and sellers deliberately *commit themselves* by concluding an agreement, the parties to a reciprocal social relation *feel committed*. Technically speaking, the values of  $s_i$  and  $s_j$  are determined as best responses to each other in the sense of game–theoretic reaction functions while the terms of trade in a market exchange are either negotiated or determined by prices which reflect the current conditions of demand and supply.

It should be noted that we do not view market exchange and social relations as spheres of action, which are isolated from each other with respect to time and place. Of course, when you come home from work in the afternoon, market activities end and social interaction with your family, neighbours and friends begins. But while completing your tasks in the workplace or negotiating prices and quantities of goods bought and sold, you come into contact with other persons. Part of the time and effort spent on interacting is to be counted as market–activities  $m_i$ . This is, of course, true for the resources given away in exchange. It is similarly true for the resources usually labelled as transaction cost. In many cases, however, you meet friendly people in the marketplace with whom you interact on a social basis (i.e. exchange gifts of time and attention) in addition to what is absolutely necessary to make the market exchange work. In an analogous manner you interact with (some of) your colleagues more intensively than is absolutely necessary for the accomplishment of common tasks. Hence, social and market activities frequently mix up with each other. It should, however, be stressed that in the following analysis we are *not* concerned with the problem of how social relations affect market–exchange in the sense of e.g. norms and expectations of trustworthiness helping to reduce opportunism in market–transactions. This is not meant to deny that such effects possibly exist.

As has already become clear we view the decisions on  $s_i$  and  $s_j$  as being made within the context of a one–shot game between two players. We envisage the evolution of a relationship as each player makes a sequence of small adjustments towards her individually optimal behaviour. Describing individually optimal actions by reaction functions derived

from an one-shot setting implies that players act myopically: Although being in fact involved in a dynamic process, players adjust their behaviour without taking into account the long-run effects on the other player and the reactions triggered off. This seems to be an appropriate description of a considerable part of everyday life, where individual lifestyles evolve in a sequence of inconspicuous little changes, which are hardly being taken notice of by our social surrounding, thus failing to lead to immediate and noticeable behavioural reactions.

## 4. Reaction functions and indifference curves

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In order to analyse how a change in market performance  $\theta_i$  influences social relations we begin with an analysis of player  $i$ 's reaction function. By substituting (1) and (2) into  $u_i(\cdot)$  we arrive at

$$(5) \quad U_i(s_i, s_j, \theta_i) := u_i[s_i, s_j, (1-s_i)\theta_i].$$

Let  $r_i(s_j, \theta_i)$  be the value of  $s_i$ , which maximizes  $U_i(s_i, s_j, \theta_i)$  subject to  $0 \leq s_i \leq 1$ . Under the assumption that  $U_i(\cdot)$  is strictly concave in  $s_i$ , behaviour is determined by

$$(6) \quad \frac{\partial U_i}{\partial s_i} = \frac{\partial u_i}{\partial s_i} - \frac{\partial u_i}{\partial y_i} \theta_i.$$

In (6) we have to distinguish between the *partial* marginal utility of  $s_i$ , i.e.  $\frac{\partial u_i}{\partial s_i}$  and the *total* or *net* marginal utility of  $s_i$  ( $\frac{\partial U_i}{\partial s_i}$ ) where the latter takes into account that increased social activities impose an opportunity cost upon player  $i$  in the form of a reduction of market income and consumption.

### *Properties of the reaction curve $r_i(s_j, \theta_i)$*

Since  $\frac{\partial u_i}{\partial s_i} = 0$  at  $s_j = 0$  according to (4), we have  $\frac{\partial U_i}{\partial s_i} = -\frac{\partial u_i}{\partial y_i} \theta_i < 0$  at  $s_j = 0$ , which implies  $r_i(0, \theta_i) = 0$ . Hence, there exists a value  $\hat{s}_j > 0$  such that  $r_i(s_j, \theta_i) = 0 \forall s_j \leq \hat{s}_j$ . Even though we assumed that player  $i$  is in principle willing to reciprocate ( $\frac{\partial u_i}{\partial s_i} > 0 \forall s_j > 0$ ), this is not sufficient for her to actually behave socially towards player  $j$ . As long as the marginal rate of substitution between income and social activities at  $s_i = 0$  does not exceed the performance parameter (i.e. the term on the right hand side of (6) is negative), opportunity costs are too high to make social behaviour worthwhile. Our model depicts egoism, workaholism and socially disruptive concerns for career and consumption as one possible solution to the individual's optimization problem, which necessarily holds for  $s_j \in [0, \hat{s}_j]$ .

For inner solutions to the maximization of  $U_i(\cdot)$  the slope of the reaction function  $\frac{\partial r_i}{\partial s_j}$ , has the same sign as

$$(7) \quad \frac{\partial^2 U_i}{\partial s_i \partial s_j} = \frac{\partial^2 u_i}{\partial s_i \partial s_j} - \frac{\partial^2 u_i}{\partial y_i \partial s_j} \theta_i.$$

According to the assumptions made in (4), the first effect is positive, whereas a priori nothing can be said as to the sign of the second one. Consumption and the gift received may substitute each other ( $\frac{\partial^2 u_i}{\partial y_i \partial s_j} < 0$ ), in which case the total marginal utility of  $s_i$  increases with  $s_j$ . Hence, player  $i$  responds to an increase in  $s_j$  by increasing  $s_i$ :  $s_i$  and  $s_j$  are strategic complements. This is true, if consumption of market goods and the resources exchanged in social relations satisfy the same needs, which may include the need for material well-being as well as the desire for social approval and status.

Interestingly, strategic complementarity between  $s_i$  and  $s_j$  (i.e. 'reciprocity' in a literally strict sense) is by no means guaranteed even if a player is willing to reciprocate c.p. ( $\frac{\partial^2 u_i}{\partial s_i \partial s_j} > 0$ ). If  $y_i$  and  $s_j$  are complements ( $\frac{\partial^2 u_i}{\partial y_i \partial s_j} > 0$ ), the second term in (7) possibly dominates the first one, such that agent  $i$  responds to an increase in  $s_j$  by reducing  $s_i$ , thus partially withdrawing from the social relation. This effect can occur, if consumption of market goods is at least in part motivated by status-seeking. The more attention and time player  $j$  devotes

to player  $i$ , the higher is the marginal utility from consumption to the latter. For any given value of  $y_i$ , marginal utility from income increases, if player  $j$  takes a closer look on  $i$ 's consumption behaviour and lifestyle. As under conditions usually assumed to hold  $\frac{\partial^2 u_i}{\partial y_i \partial s_j} > 0$  implies  $\frac{\partial^2 u_i}{\partial s_j \partial y_i} > 0$ , this demonstrates that complementarity between  $y_i$  and  $s_j$  may also result from consumption being a necessary input to the social relation in the sense of an increase in  $y_i$  making  $j$ 's contribution to the relation more enjoyable to player  $i$ . However, since the complementarity between  $y_i$  and  $s_j$  has to be sufficiently high in order to determine the sign of (7), we use  $\frac{\partial r_i}{\partial s_j} \geq 0$  for  $0 < r_i(s_j, \theta_i) < 1$  as a baseline scenario.

### *Shifts of the reaction curve $\frac{\partial r_i}{\partial \theta_i}$*

To see, how the total marginal utility of social interaction changes in response to economic growth, we differentiate (6) with respect to  $\theta_i$ :

$$(8) \quad \frac{\partial^2 U_i}{\partial s_i \partial \theta_i} = \frac{\partial^2 u_i}{\partial s_i \partial y_i} (1-s_i) - \frac{\partial^2 u_i}{\partial y_i \partial y_i} (1-s_i) - \frac{\partial u_i}{\partial y_i}$$

For unchanged  $s_i$ , economic growth leads to an increase in income  $y_i = (1-s_i)\theta_i$ . This changes the partial marginal utility of social activities by  $\frac{\partial^2 u_i}{\partial s_i \partial y_i} (1-s_i)$ . Nothing can be said a priori as to the sign of this term. Hence, it is perfectly possible, that a higher efficiency in the market place c.p. leads individuals (via  $\frac{\partial^2 u_i}{\partial s_i \partial y_i} > 0$ ) to increasingly engage in social interaction. The motives expressed by a positive cross-effect can be manifold. It can represent the desire to share one's own increased wealth with others in the form of devoting more time and attention to them. It can also derive from the more snobbish satisfaction from signalling one's own well-being to others by engaging in social activities. However, the concern for social status can also imply  $\frac{\partial^2 u_i}{\partial s_i \partial y_i} < 0$ . To see this, assume that status can be achieved by both social activities and private consumption, such that  $s_i$  and  $y_i$  are substitutes with respect to social status. In this case, an increase in income and the additional status

derived therefrom reduces the need to seek social approval by devoting resources to social activities.

The second term in (8) has a negative sign under usual conditions. As marginal utility from income falls, the marginal opportunity costs of social activities are reduced such that the optimal value of  $s_i$  increases c.p.. This effect is particularly interesting as it demonstrates that enhanced market–efficiency *strengthens* social relations by improving the satisfaction of consumption needs, which reduces the importance of consumption in the decision on the trade–off between  $s_i$  and  $y_i$ . However, marginal opportunity costs increase as measured by the third term which tends to pull resources into market activities. Summing up, we come to the conclusion, that the shift in the reaction curve  $\frac{\partial r_i}{\partial \theta_i}$  can be positive or negative.

### *Indifference curves*

A short description of indifference curves will help us to illustrate the following analyses. Implicit differentiation of (5) yields

$$(9) \quad \left( \frac{\partial s_j}{\partial s_i} \right)_{U_i = \text{const.}} = - \frac{\frac{\partial u_i}{\partial s_i} - \frac{\partial u_i}{\partial y_i} \theta_i}{\frac{\partial u_i}{\partial s_j}}$$

There are several things to note about (9): First, for  $s_i > (<) r_i(s_j, \theta_i)$  total marginal utility of  $s_i$ , which is given by the numerator in (9), has a negative (positive) sign. This implies that the slope of indifference curves is positive (negative) at all points above (below) the reaction function. Secondly, of course, at  $s_i = r_i(s_j, \theta_i)$  the slope of the indifference curve changes sign. Thirdly, as  $\frac{\partial u_i}{\partial s_i} = 0$  at  $s_j = 0$  according to (4), the slope of the indifference curve going through  $s_i = s_j = 0$  is positive. Finally, we note that agent  $i$ 's utility increases, when we move to the right in figure 1.

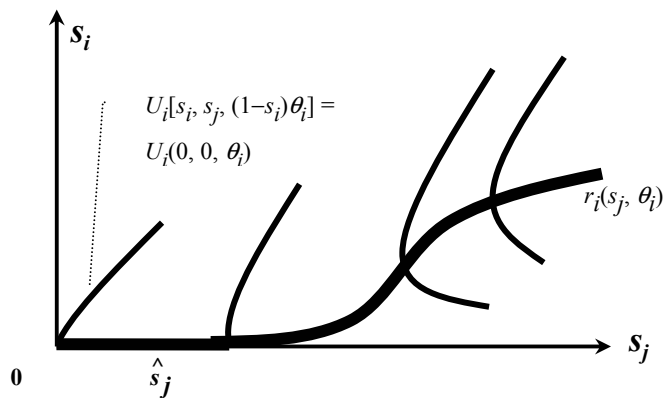


Figure 1: Reaction function and indifference curves of player i

## 5. Equilibria

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### *The pure market–equilibrium*

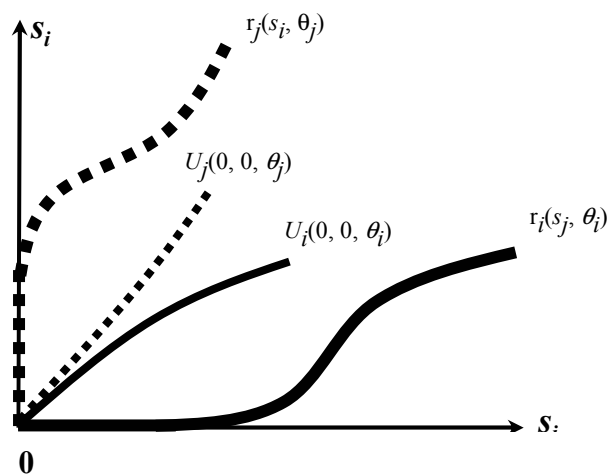
It is easy to see, that  $(s_i, s_j) = (0, 0)$  is a Nash–equilibrium which always exists under the assumptions made so far. As has already been demonstrated  $r_i(0, \theta_i) = 0 = r_j(0, \theta_j)$ . Obviously, this equilibrium, which we denote as the pure market–equilibrium, is the type of equilibrium traditional economics is concerned with. The homo oeconomicus of our textbooks does not care for sharing relations with others nor does she receive gifts but uses all of her available resources for market transactions or consumption. In the language of our model this means that the homo oeconomicus is characterized by  $\frac{\partial u_i}{\partial s_i} = 0 \forall s_j$  which leads to a pure market equilibrium at  $m_i = 1$ .

One could criticise, that the assumption of complete indifference with respect to social relations is not a very realistic one. But apart from considerations of analytical simplification, ignoring social relations in the textbook–model seems to be well justified by the model developed above. It demonstrates that the traditional textbook–model produces the same results as a more complex model in which social actions disappear in equilibrium. Hence, whether or not the wish to behave socially towards other persons is incorporated in individuals’ preferences does not change equilibrium results. Irrespective of how intensively agents desire to relate to each other outside the marketplace, in the pure market–equilibrium, they behave just like the narrowly consumption–oriented monads

described in the traditional theory of the household. In a certain sense, our model justifies the use of an “*atomized, undersocialized conception of man in the utilitarian tradition*”<sup>8</sup> as an equilibrium outcome.

As far as the pure market–equilibrium is concerned, all the conventional wisdom on the efficiency and failures of the market–system continues to hold. Endogenous developments like economic growth as well as governmental interventions to correct market failures are highly welcome if they increase at least one agent’s material payoff from market–transactions without harming any other market–participant.

But it should be noted that nothing can be said as to the overall welfare properties of the pure market–equilibrium. It is true that perfect markets lead to an efficient allocation of resources spent on market activities. It may, however, also be true, that the distribution of resources between market activities and social activities fails to establish an efficient allocation of available endowments. When thinking about the interdependence between market performance and social life, we have to face the possibility that allocative efficiency dictates a complete breakdown of social relations. This situation is illustrated in figure 2 where both agents’ indifference curves through the origin are close to the corresponding



**Figure 2: Pareto–optimality of the pure market–equilibrium**

reaction curves. In order to Pareto–dominate the pure market–equilibrium, an allocation has to be both to the right of the indifference curve  $U_i(0, 0, \theta_i)$  and above the indifference curve

<sup>8</sup> GRANOVETTER [1985, p. 55.]

$U_j(0, 0, \theta_j)$ . Obviously, no such allocation exists, which proves that in the scenario depicted above the pure market–equilibrium is a Pareto–optimum. Such a situation is particularly likely to occur in highly developed market economies, which are characterised by high values of  $\theta_i$  and  $\theta_j$ . In this case, the opportunity cost of social activities in terms of market income is high which according to (9) *ceteris paribus* (i.e. neglecting cross–effects on marginal utilities) leads to a flat indifference curve for player  $i$  and a steep one for player  $j$ . Although, in this society, the principle of *do–ut–des* pervades all kinds of interactions in the form of explicit or implicit contracts leading, in a certain sense, to a crowding–out of social relations, this poses no problem as far as welfare is concerned.

However, efficiency of the equilibrium at  $s_i = s_j = 0$  is by no means ensured. Apart from having a positive sign, nothing can be said as to the slope of the indifference curves through the origin. Hence, indifference curves possibly cut each other twice such that they enclose an area where both players are better off at all allocations in the interior of this region than at the pure market–equilibrium. If this is true, an inefficiently low amount of resources is devoted to social activities in equilibrium. This scenario poses some complicated problems. First, note that the equilibrium at  $(0, 0)$  is locally stable. As a consequence, in the neighbourhood of the equilibrium, society evolves along a path, which makes at least one player worse off. Both players strive at coming closer to their respective reaction functions by reducing social activities. To an outside observer this would appear as economic growth driven by an increase in the amount of resources being drawn into the market economy, which causes the volume of goods and services being produced exchanged and consumed to rise. Ironically welfare, as is measured by the GNP, rises although average life satisfaction remains constant if there are winners and losers or even declines. This possibly accounts for the phenomenon found in many studies, that, contrary to the predictions of traditional economic theory, there seems to be no positive correlation between happiness and economic growth.<sup>9</sup>

What is even more disturbing is the fact that mechanisms, which are usually employed to cure the inefficiencies resulting from positive externalities, may fail to have the desired effects in the context of social relations. Bilateral agreements between the agents not to withdraw from each other lack credibility unless they are backed up by the threat of sanctions for the case of defection. This being the case, a bilateral agreement on the amount of resources spent on social activities becomes indistinguishable from a contract, which specifies the terms of exchange of market goods: Player  $i$  promises to transfer  $s_i > 0$  to

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<sup>9</sup> PUTNAM [2000], EASTERLIN [1974], OSWALD [1997]

player  $j$  in return for  $s_j > 0$  with defection e.g.  $s_i = r_i(s_j, \theta_i) = 0$  being made prohibitively costly. Hence, the attempt to fix social activities by binding agreements actually turns them into market activities. Remember that we defined social activities as gifts i.e. as transfers of resources where neither the giver is contractually obliged to give nor the receiver is legally entitled to be given to. This feature prevents market-like mechanisms to work in the realm of social relations. The same applies to Pigouvian subsidies usually recommended to internalize positive externalities. An increase in  $s_i$  caused by monetary incentives is unlikely to be perceived by the receiver as a perfect substitute for a gift which is made out of some sort of feeling of an inner obligation to give as it is expressed by  $\frac{\partial u_i}{\partial s_i} > 0$ . Of course this is similarly true for transfers which are enforced by redistributive taxation. The key point is that the transfer of resources has a different meaning to both the giver and the receiver depending on the reason why the transfer takes place. Making a gift signals the giver's attitude towards the receiver as a dignified person or her appreciation for the receiver's social activities. Contrary to this, transfers, which are made as a reaction to monetary incentives or as a means to fulfil a contract, fail to contain this kind of information. For the same reason, the efficiency problem in social relations cannot be solved in the dynamic strategic setting of a supergame, where one player cooperates ( $s_i > 0$ ) *in order to* prevent retaliation by the other player in the next stage-game.

This leads to a dilemma as on the one hand we end up in an inefficient equilibrium when social relations are crowded out by profitable market interactions. On the other hand, interventions aiming at improving the efficiency of social exchange risk to drive out the social aspect of gift exchange, thereby changing its meaning and finally its utility to giver and receiver. Lowering opportunity cost e.g. by taxing market incomes will not work either. As long as marginal net income from shifting resources into the market economy is strictly positive, the best response to  $s_j = 0$  is  $s_i = 0$  and vice versa.

### *Equilibria with social interaction*

Note that the uniqueness of the equilibrium at  $s_i = s_j = 0$  is by no means implied by the assumptions made. Hence, we have to take into account the possibility that equilibria with positive amounts of social interaction coexist with a pure-market equilibrium. If such an equilibrium exists, it necessarily Pareto-dominates the pure market-equilibrium. To see this it suffices to consider the following chain of inequalities where  $(s_i^*, s_j^*)$  denote the strictly positive equilibrium values of social transactions:  $U_i(0, 0, \theta_i) < U_i(0, s_j^*, \theta_i) \leq$

$U_i(s_i^*, s_j^*, \theta_i)$ . The first inequality is implied by the assumption that  $s_j$  has a positive external effect on player  $i$ . The second one expresses player  $i$ 's revealed preference for  $s_i^* > 0$  when confronted with  $s_j^* > 0$ .

Multiple equilibria generate a coordination problem: Players have to manage their expectations concerning their counterparts' behaviour such that an equilibrium can be reached in the first place i.e. missing an equilibrium by playing  $(s_i, s_j) = (0, s_j^*)$  due to diverging expectations on which equilibrium is going to be realized does not occur. Second, it is, of course, desirable to realize a Pareto–superior equilibrium. Both problems can be solved if the equilibrium finally realized is selected according to the criterion of payoff–dominance. In this view, both players are aware of the Pareto–ranking between coexisting equilibria and expect their counterpart to play the equilibrium strategy which leads to the highest individual payoff. However, as is elaborated in HARSANYI AND SELTEN [1988], a serious objection can be made against payoff–dominance as a criterion of equilibrium selection: Aiming at the payoff–dominant equilibrium and playing  $s_i^* > 0$  accordingly involves the risk of ending up with  $U_i(s_i^*, 0, \theta_i)$  when the other player aims at the pure market equilibrium. If, on the other hand, player  $i$  aims at the pure market–equilibrium and this equilibrium fails to be realized due to  $j$  playing  $s_j^* > 0$   $i$ 's payoff is  $U_i(0, s_j^*, \theta_i)$ . As  $U_i(s_i^*, 0, \theta_i) < U_i(0, 0, \theta_i) < U_i(0, s_j^*, \theta_i)$ , the first inequality being implied by  $\frac{\partial U_i}{\partial s_i} < 0$  at  $s_j = 0$ , whereas the second one follows from  $\frac{\partial U_i}{\partial s_j} > 0$ , the payoff–dominant equilibrium may fail to be a focal point. To see this, assume that both players are extremely averse towards the risk implied by the coordination problem such that equilibrium selection occurs according to a maximin–criterion. Players choose strategies out of the set of equilibrium strategies such that the worst payoff (i.e. the payoff realized in case that the equilibrium aimed at is missed) is maximised. This leads to the pure market–equilibrium since fully integrating into the market economy and receiving a gift is better than bowling alone. Hence, coordination failure in the sense of a Pareto–inferior equilibrium being realized, is a real possibility. This result is strengthened by the fact that with continuous reaction functions at least one equilibrium with social interaction is unstable under a process of alternating myopic adjustments of behaviour. This means that even if such an equilibrium had been realized, small shocks such as an increase in market performance  $\theta_i$  possibly trigger off an evolution of continuously deteriorating social relations. Note that although a rise in  $\theta_i$  is a Pareto–improvement as long as all players stick to their initial strategies, the ensuing path towards the pure market equilibrium makes them all worse off.

Note also that an equilibrium with social interaction such that at least one player transacts with the market ( $s_i^* < 1$ ) is necessarily Pareto-dominated by states in the neighbourhood of the equilibrium point. By the envelope theorem, the effect of an increase of  $s_i$  on  $U_i$  is of second order, whereas it has a positive first-order effect on  $U_j$ . Again, any Pareto-improving deviation from the Nash-equilibrium requires a mechanism, by which players can credibly commit themselves not to return to the reaction function. The difficulties of employing such a mechanism to the context of social relations have already been discussed above.

We now turn to the comparative-static properties of equilibria with social interaction. In view of the remarks made above, which demonstrate that an equilibrium with social interaction is not necessarily chosen, e.g. when the co-existing pure-market equilibrium is risk-dominant, this seems to require a brief justification: Considerations of risk-dominance vs. payoff-dominance explain why groups of individuals or whole societies do not necessarily switch to Pareto-superior equilibria with social interaction as soon as such an equilibrium exists. But this does not preclude equilibria with social interaction from being realized. If we imagine a society, which initially consists of small communities, in which basic needs are satisfied by social exchange based on traditional norms and values, the gradual expansion of market exchange between communities is unlikely to completely wipe out social exchange in one single big bang which tosses the society to the pure-market equilibrium. Instead, we should expect that social relations adapt only gradually to the modifications of the equilibrium with social interaction which are caused by the development of the market-system. This is the reason why it is interesting to study, how (locally stable) equilibria with social interaction are affected by an increase in market performance.

The first thing to note in this context is the fact that the equilibrium values ( $s_i^*, s_j^*$ ) change according to

$$(10) \quad \frac{\partial s_i^*}{\partial \theta_i} = \frac{1}{\Delta} \frac{\partial r_i}{\partial \theta_i} \text{ and}$$

$$(11) \quad \frac{\partial s_j^*}{\partial \theta_i} = \frac{1}{\Delta} \frac{\partial r_j}{\partial s_i} \frac{\partial r_i}{\partial \theta_i}$$

$$\text{with } \Delta = 1 - \frac{\partial r_i}{\partial s_j} \frac{\partial r_j}{\partial s_i}$$

As local stability requires  $\Delta > 0$ , with strategic complementarity ( $\frac{\partial r_i}{\partial s_i} > 0$ ) the signs of the terms in (10) and (11) depend on the sign of  $\frac{\partial r_i}{\partial \theta_i}$ . In the discussion on the properties of the reaction functions (equ. (8)) it had been demonstrated that  $\frac{\partial r_i}{\partial \theta_i}$  can be positive or negative. An increase in market–income due to economic growth can result in an expansion of social interactions if consumption of market–goods and social activities are complements ( $\frac{\partial^2 u_i}{\partial s_i \partial y_i} > 0$ ). In the case of substitutability, this partial effect leads to a reduction of social activities. With diminishing marginal utility of income, a rise in  $\theta_i$  c.p. leads to an increase in social activities which is counteracted by the rise in opportunity costs of social activities. The ambiguity of this result demonstrates that, contrary to what could have been expected at first glance, an expansion of the market–economy does not lead to a weakening of social bonds under all circumstances. It might as well be the case that the improvement in the satisfaction of consumption needs causes a reallocation of resources to the benefit of increased social interaction. Obviously, it all boils down the question of whether the additional goods and services, which become available due to economic growth, complement or substitute social activities. It should be stressed that the answer to this question does not only refer to individuals' preferences. The crucial point is whether the logic inherent in the evolution of markets is biased towards supplying complements to or substitutes for relational goods.

In order to study the welfare effects of economic growth we define the value of utility in an equilibrium with social activities as

$$(12) \quad U_i^* = u_i(s_i^*, s_j^*, (1-s_i^*)\theta_i) = U_i^*(\theta_i, \theta_j).$$

Then, making use of the envelope–theorem yields

$$(13) \quad \frac{\partial U_i^*}{\partial \theta_i} = \frac{\partial u_i}{\partial s_j} \frac{\partial s_j^*}{\partial \theta_i} + \frac{\partial u_i}{\partial y_i} (1-s_i^*) \text{ and}$$

$$(14) \quad \frac{\partial U_j^*}{\partial \theta_i} = \frac{\partial u_j}{\partial s_i} \frac{\partial s_i^*}{\partial \theta_i}.$$

Equation (13) demonstrates that a player profits from an increase in her own ability to transact in the market  $\theta_i$  as long as the other player's behaviour remains unchanged. This is

expressed by  $\frac{\partial u_i}{\partial y_i} (1-s_i^*) > 0$  on the right hand side of (13). There is, however, a second effect following from  $j$ 's reaction to  $i$ 's change in behaviour. According to (11), the sign of this effect is determined by the sign of  $\frac{\partial r_i}{\partial \theta_i}$  i.e. player  $i$ 's initial reaction to an increase in  $\theta_i$ . The same applies to the effect of an increase in  $\theta_i$  on player  $j$ 's utility.

In view of our discussion of (10) and (11) equations (13) and (14) reveal, that economic growth is a Pareto-improvement only if those individuals, whose income increases, do not withdraw from social relations. If, however, player  $i$  reacts to an increase in  $\theta_i$  by supplying a greater part of her resources to the market, at least  $i$ 's counterpart in the social relation suffers a loss in welfare. We cannot even rule out the case that economic growth makes all individuals worse off. Note that according to (13) player  $i$  profits from a growing income (the second term on the right-hand side), but is hurt by deteriorating social interaction. If the absolute value of the first-term is larger than the marginal gain, the equilibrium value of  $i$ 's utility falls as  $\theta_i$  increases.

The case of improved market performance leading to an overall loss in welfare is particularly interesting as it turns the conventional economic wisdom on the welfare properties of the market economy upside down. The market process exhausts all possible gains from specialisation and exchange. In the long run competition eliminates excess burdens implied by monopolistic price setting and all forms of waste. This means that a perfect market system maximizes the return on resources supplied to the market, i.e.  $(1-s_i)\theta_i$ . The downside of the wealth provided by the market system is the loss in moral sentiments. There are two mechanisms to this effect which interact with each other. On the one hand, resources are pulled into the market sphere by an increase in their marginal return. One agent's partial withdrawal from the social relation reduces the other's marginal benefit from social activities. This in turn pushes the latter agent's resources into the market. Although we derived these ideas for the case of economic growth which benefits only one of the two parties to social exchange, it should be clear that the same result applies when both  $\theta_i$  and  $\theta_j$  increase although in this case each agent is partially compensated for the loss of social relations by the increase in the consumption of market goods.

## *Reinforcing feedbacks*

Due to strategic complementarity between individually optimal levels of social activities, the overall effect of an increase of  $\theta_i$  on  $s_i^*$  is larger than the impact effect at a stable equilibrium. While initially  $s_i$  changes by  $\frac{\partial r_i}{\partial \theta_i}$ , the change in the equilibrium value of  $s_i$  amounts to  $\frac{1}{\Delta} \frac{\partial r_i}{\partial \theta_i}$  which is  $\frac{1}{\Delta} > 1$  times the initial variation (see (11)).

One could go one step further by assuming that market performance is not completely independent from the amount of resources devoted to the market. On a macro level economic growth can be accelerated as individuals gradually integrate more completely into the market economy in response to an initial shock. The resulting growth of resources traded within the market opens up additional opportunities for specialization and exchange, where the latter effect can be thought of to increase productivity along the lines of argumentation of the theory of endogenous growth. Clearly, these effects are not taken into account on the micro level, when individual adjustments to changes in the overall conditions are made. Hence, a small initial shock possibly triggers off an evolution of sustaining economic growth paralleled by a deterioration of social relations mutually reinforcing each other, where the total welfare effects of this development are not necessarily positive.

On a more speculative level one could argue that the expansion of the market economy is not without consequences for the norms guiding social interaction. Remember, that the logic of social exchange differs fundamentally from the kind of rationality applied to market transactions. Whereas in the former case one gives voluntarily as a response to the fact, that one has received ( $\frac{\partial u_i}{\partial s_j} > 0$  for  $s_j > 0$ ), paying a price for a good bought in the marketplace does not result from a wish to reciprocate but from a legal obligation to do so, which is backed up against defection by the threat of prohibitively high external sanctions. As an increasing part of individuals' lives is devoted to market transactions, the logic of giving only what one is legally obliged to give may gradually penetrate individuals' values. One could refer to the effects of cognitive dissonance known from social psychology<sup>10</sup> according to which agents tend to adjust their evaluation of the decisions they take in a way, which increases the perceived utility from actions taken relatively to the utility foregone by

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<sup>10</sup> FESTINGER [1997], AKERLOF AND DICKENS [1982]

the alternatives not chosen. In our model, rebalancing contradictory cognitions by ex-post justifying a more intensive integration into the market economy can be expressed by a reduction in the marginal utility from using resources for social interaction. In the long run this leads to a further reduction of social transactions. This mechanism establishes a loop of mutually reinforcing feedbacks between an expansion of the market economy and the production of preferences, such that an increasing amount of resources is transferred via the market. The homo oeconomicus of textbook models can be interpreted as the endpoint of this kind of evolution.

When economic conditions change rapidly, say due to an integration of local economies into a globalized world market, which occurs within an interval of time which is considerably shorter than the life-span of one generation, we should witness a more or less pronounced polarization within societies. If economic growth benefits different social groups asymmetrically, as it is the case when some groups are unable to profit from growth due to restrictions on regional mobility or human capital, these groups lose, even if the face value of their marketable resources  $\theta_i$  is left unchanged. Being connected with individuals who are economically in a more advantageous position makes the former lose their partners to social exchange. Other groups may be hurt by the gradual dissolution of social networks, even though they actually profit economically. Individuals of this group may be young, mobile on an international scale, well-educated and equipped with all kinds of endowments necessary for economic success. If, however, they happen to strive for a balance between social and market integration, which turns out to be incompatible with the prevailing economic conditions, they will lose or at least win only moderately. Finally, there is a group which wins the jackpot. Inspection of (13) reveals that a low degree of social cohesion within a group is a good precondition for benefiting from economic growth. Within the framework of the model, social cohesion can be represented by  $\frac{\partial u_i}{\partial s_j}$  since this expresses the dependence of an agent's welfare on her social environment.

It seems not too far-fetched to expect that the progressive intra-societal differentiation will affect the political and cultural superstructure. On the one hand, insofar as social interactions provided non-market insurance against life-risks, as it is typically the case within families and clans, the result could be an increasing pressure on governmental institutions to provide welfare-oriented measures as a substitute for loosening social bonds. Interestingly, and again contrary to established views, such pressure does not arise in response to uninsurable risks inherent to the market system as such e.g. the risk of

becoming unemployed or the loss in productivity when growing old. What is at stake is not a compensation for market failures, but for the costs of a growing market economy caused in the realm of social relations. Depending on the capabilities of different social groups to influence the political process, the state will readily assume responsibility for social concerns (where the term social is now used in a welfarist sense) in order to acquire acceptance for the process of economic development at least from the politically most powerful groups. By providing substitutes to socially exchanged goods, imperfect as they may be from the perspective of the individuals concerned, the state lowers the marginal utility from reciprocal giving, thereby accelerating integration into the market economy.

## **5. Policy implications**

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The basic idea behind this paper is simple: Individuals' well-being does not only depend on the amount of market-traded goods and services, but also on stable and satisfying social relationships. Both the acquisition of goods and the establishment and maintenance of relationships (the production of relational goods) require the use of scarce resources, such that a trade-off arises. As soon as these two assumptions are accepted, both spheres of action have to be seen as being closely interrelated, since the efficiency of market-mediated trade defines the opportunity-cost for investing in social relationships.

Two problems may occur as a consequence of this setting: First, the economy possibly gets trapped in a Pareto-inferior equilibrium. Second, economic growth may lower welfare instead of increasing it.

With respect to the second problem two main conclusions are to be drawn from this analysis:

Firstly, policy interventions aiming at the removal of market-imperfections and barriers to trade may backfire in terms of overall welfare as they increase individuals' incentives to withdraw from social participation. Our model indicates that there possibly exists a U-shaped relationship between market-efficiency and welfare. For small and medium degrees of market perfection, more efficient trade does not outweigh the cost caused in the sphere of social relations. Only if market-productivity is sufficiently high, such that equilibria with social activities cease to exist, further improvements lead to an increase in welfare. If this is true, and if economic policy can contribute to the functioning of markets

only in small sequential steps, then a problem of distributing the costs and benefits between generations occurs: Current generations lose while future generations profit from being born into a society with highly efficient markets. For current generations it may even be desirable to slow down the autonomous evolution of the market–system in order to preserve established and well–functioning social relations. The task of a welfare–oriented economic policy in such a scenario could be more to tame the expansion of markets rather than to promote it.

Secondly, interventions to increase the efficiency of markets could make sense, provided that they are complemented by measures, which reduce the harmful side–effects on social relations. If we regard  $\frac{\partial u_i}{\partial s_i}$  and  $\frac{\partial u_i}{\partial s_j}$  as the net benefits from social interaction, i.e. the benefit to be earned after the cost of finding suitable partners for a social interaction, setting up and making use of a relationship have been paid for, social relations can be stabilized against the allurements of the market–system by subsidizing these costs such that the net benefits from social activities remain on a sufficiently high level. This suggests a twofold strategy, whereby the gains from growth are partially skimmed via the tax system (thus holding down the increase in the  $\theta$ s) and the revenues are used to build up an infrastructure of facilities which allows people to get into contact with each other. Possibilities range from supporting clubs, neighbourhood initiatives and other non–profit organizations to providing suitably equipped town halls for non–commercial events.

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