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Networks, Group Identity and Poverty

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Abstract – *In the past decades, the economic analysis of social networks and groups has rapidly developed. This article discusses a few mechanisms through which social networks and groups affect poverty and social and economic inequality. Social networks and groups can both keep people in poverty or be tools for the emancipation of the poor. An efficient poverty reducing policy should account for these mechanisms or even employ them for the greater good.*

Résumé – *Dans les dernières décennies, l'analyse économique des réseaux et groupes sociaux s'est rapidement développée. Cet article traite de quelques mécanismes par lesquels les réseaux et groupes sociaux affectent la pauvreté et les inégalités sociales et économiques. Les réseaux sociaux et les groupes peuvent à la fois maintenir les gens dans la pauvreté ou être des outils pour l'émancipation des pauvres. Une politique efficace pour réduire la pauvreté devrait tenir compte de ces mécanismes, ou même les employer pour le plus grand bien.*

1 THE ANALYSIS OF SOCIAL NETWORKS AND GROUPS

Economists have traditionally focused on anonymous large scale economic and social interactions on markets, in which all relevant information about the market parties can be summarized by market prices. Real world heterogeneities such as culture and personal relations which failed to fit into this scheme were put between brackets or dismissed as 'sociological' questions. The neoclassical *homo economicus* was a 'social moron' (Sen, 1977) living in a social void. This was largely a

methodological choice. In their construction of a rigorous mathematical theory of economic behavior, economic theorists first focused on the most basic building stones of economic behavior: the functioning of markets and prices. Moreover, they lacked the mathematical tools to analyze more complicated (strategic) interactions, such as personal interactions and culture. Today, markets and prices are reasonably well (or at least better) understood, and the rapid development of game theory offers instruments to analyze social and economic interactions in which the identity of the other parties matters. Personal relationships prove to be important co-determinants of success in economic and social life, and can thus be an important source of economic and social inequality and poverty.

In the recent decades, the economic analysis of social networks and groups has known a rapid development.¹ A network is described by a set of agents (in our case consumers) and a set of bilateral relationships between these agents (e.g. friendships between consumers). We try to understand the structure of this social network as the result of individual decisions of agents or consumers. Consumers are assumed to have a preference ordering over all possible networks. A new relation can typically be established by mutual consent of both consumers at the two sides of the relation, and a relation can be terminated unilaterally by any of the 2 involved partners. Economists are then typically interested in equilibrium networks, and although many different equilibrium concepts exist, one commonly used concept is pairwise stability. A network is called pairwise stable if it is such that i) no consumer wishes to unilaterally terminate an existing relationship and ii) no pair of currently unrelated consumers prefer to form a new relationship between each other above remaining unrelated, all other things remaining constant.

In their full generality, these are typically mathematically difficult questions, as the optimal choice of each consumer depends on the choices of all others. To whom I prefer to be related can depend on the relations maintained by my partners, and if I decide to change my relationships, this can induce a change in the relationships maintained by my partners, or by their partners etc., which can then again change my most preferred set of relationships. However, by adding more structure to the problem, one may derive a number of relatively easy features of equilibrium social networks which can aid to a better understanding of the social mechanisms which cause or aggravate poverty and persistent inequality.

Consider first a particular problem known as the 'marriage problem'. In this problem, the set of consumers is divided in two disjoint nonempty subsets, typically called the 'men' and 'women'. Assume for simplicity that the population counts equally many men and women. In this particular problem, each consumer is only allowed to relate to another consumer of the other set, and each consumer may at most maintain one relationship. Gale and Shapley (1962) show that the marriage problem always has at least one equilibrium (a 'stable marriage matching'²), but that the marriage problem can in general also have many possible equilibria. Eeckhout (2000) elicits a few situations in which the marriage problem has a unique

1. For an introductory survey to the literature, see e.g. Jackson (2003, 2008).

2. No consumer prefers to unilaterally break up his present relation, and no pair of currently unrelated man and women prefer to be related to each other above their current relationship

equilibrium. If all women share the same preference ordering over the men as potential partners, and all men have the same ordering over women, then the unique equilibrium is positively assortative. The most wanted man and woman relate, the second most wanted man and woman form a couple etc.³ Such an equal ranking of potential partners is of course merely a benchmark case, but many ways can be formulated to rationalize it. E.g. if consumers vary in income and all prefer a richer above a poorer partner because partners jointly consume (part of) their joint income. This result extends to various degrees to general network formation games. Real world social networks typically show a high degree of 'homophily' or assortativeness. People tend to relate disproportionately much with others much like them.⁴ This assortativeness of social relationships aggravates existing social and economic inequalities. At the level of assortativeness in marriages, this is a well-known phenomenon in the empirical analysis of economic inequality. Burtless (1999) estimates that the increase⁵ in the earnings correlation of husbands and wives from 1979 to 1996 explains about 13% of the increase in overall earnings inequality among households in the U.S.

The assortativeness of broader social networks also implies inequalities in opportunities. Personal networks have frequently been shown to be crucial in obtaining information about job opportunities (see. e.g. Granovetter (1973), Calvo-Armengol (2004), Calvo-Armengol and Jackson (2004)), trade opportunities if markets are non-centralised (Kranton and Minehart, 2001) or mutual insurance (cfr. *infra*). If all consumers share the same ranking of all consumers in terms of attractiveness as a partner, and consumers can only maintain a limited number of relationships, then social network formation can be expected to aggravate unequal opportunities. Moreover, if consumers can invest in the qualities by which their attractiveness as a potential partner is judged, then endogenous social network formation can give rise to relative concerns or competition for social status.⁶ In order to attract the best partners, consumers should themselves appear a more attractive partner than others. Thus, relative rather than absolute quality (e.g. income) matters. Yet, although outcompeting rivals in order to relate to more attractive partners may seem individually rational, it can be disastrous from a societal point of view. Whenever one individual manages to climb a rank in the social ordering of attractiveness as a partners, another individual must necessarily lose one rank. And if all exert the same effort to boost their attractiveness, all tend to remain at the same rank as without any extra efforts. While this status competition can in principle have positive effects (whenever the investments in attractiveness have positive external effects), this dynamic is typically held responsible for wasteful conspicuous consumption (see e.g. Frank 1999) and excessive risk taking (Robson, 1992). And although the phenomenon of wasteful display of goods is best documented for the rich and middle classes, its consequences are probably most damaging for the poor. The least well off likely must make the gravest sacrifices in order to afford some visible consumption goods (such as mobile phones and flatscreen TV's),

3. This was already noted by Becker (1973).

4. See e.g. McPherson e.a. (2001) for a survey.

5. The Spearman rank correlation of earnings increased from 0.012 to 0.145 in this period.

6. See Truyts (2010) for a survey of this literature.

merely in order to appear (and feel) a respectable partner in everyday social interactions. Ireland (1994) shows that status concerns can also induce the poor to forego take-up of pro-poor welfare benefits. If the take-up of welfare benefits can be observed by spectators about whose good opinion the poor care, they may prefer to forego the benefit and be materially worse off in order to distinguish themselves from even poorer consumers, who do take up the welfare benefits.

As suggested above, assortative social networks can provide the already worst off with poorer information about opportunities, e.g. fewer chances to learn about new skills. Note that this also induces a degree of intergenerational persistency in inequality and poverty: children are typically socialized in the social network of their parents, and start their thus with unequal access to opportunities and information. Moreover, assortative social networks can also lead to misperceptions in the assessment of human capital investments. Ray (2006) discusses poverty as a failure of aspirations. Aspirations are typically based on the experience of others deemed sufficiently similar. Normal people do not aspire the successes of Niels Bohr or Steve Jobs, but may think that the successes of their high school peers are within reach. If these peers are rather unsuccessful, consumers may aspire little in life and invest too little ('fatalism'). If consumers compare themselves with others which are too successful, their aspiration levels can be unrealistically high, and they may deem the investment costs for success too high, thus abstaining from investments. If social networks are highly assortative and dynamic, then social mobility can rapidly cut all social ties between successful individuals and their original peers. Successful individuals are then no longer recognized as being sufficiently similar to inspire raised aspiration levels, and the poor risk remaining left behind in fatalism.

Complementarities in production or social interaction can also induce young generations to invest in the wrong qualities. Assume that youngsters can choose to invest in two qualities, muscle or brain, and that an economy has evolved so that cooperating with others using the brain is more productive than using muscles. If a child happens to be born in a parental network where muscle is the commonly used and most respected quality, then the child mostly meets muscular people, and it may be optimal for it to invest in muscles rather than brain. This in turn discourages the formation of relations with brain oriented others. Note that if the process of cutting old social relationships (e.g. inherited from parents) and forming new relations is sufficiently slow or costly, youngsters may decide to invest in the least productive quality despite perfect knowledge about its inferior productivity. This social poverty trap resembles work by Bisin and Verdier (2000) on cultural assimilation. In this model, parents of cultural minorities (e.g. immigrants) can choose to socialize their children in the culture or language of their culture of origin or of their new home country. If they care sufficiently about sharing their original culture with their children, then they may prefer to socialize their children in the original culture, at the cost of the child's interaction with its majority culture peers. Bisin and Verdier show that the investments of parents in socializing their child in their original culture, and thus the importance attached to preserving the original culture, can increase if the probability of the child assimilating to the new majority culture of its peers increases. The very understandable and legitimate hope of par-

ents to share their culture and language with their children can thus deprive minority groups of economic opportunities.

2 THE BENEFITS AND COSTS OF COOPERATION IN GROUPS

The above grim picture of the social and economic opportunities of cultural minorities or closed and dense social groups may fortunately be overly pessimistic. Bowles and Gintis (2004) show that closely knit small networks, e.g. ethnic minorities, can greatly benefit from advantages of information. On large scale markets, partners in a trade transaction are always vulnerable to deception by the other party, such that (costly) legal measures and guarantees must be arranged to secure a proper transaction. If trade is embedded in a small and dense social network, then news about deceit or improper behavior rapidly spreads, and deceivers can be punished or even expelled from the network. The threat of punishment or expulsion - and loss of these network benefits - can guarantee trade at lower costs within the network, and this absence of legal costs can compensate the more limited opportunities for trade within a small network, compared to the large scale market.

The same informational benefits and embeddedness in social networks can also partially remedy informational problems in insurance and financial markets. The archetypical problem of insurance industries are moral hazard and adverse selection, both caused by a lack of information of the insurer about respectively the behavior and type of the insured. Moral hazard means that once consumers are insured against possible calamities, they have less an incentive to take precautions at their own expense to avoid these calamities. Adverse selection means that if consumers differ in the risks they run, and if insurers cannot distinguish between these consumer types, a uniform insurance contract offered to all consumers is most beneficial to the consumers running most risks, and too expensive for the lowest risk consumers. In developing countries, the absence of large scale insurance markets is compensated by a mutual insurance mechanism within the social network (see e.g. De Weerd and Dercon, Fafchamps and Gubert (2007), Morduch (2006)). This small scale insurance mechanism lacks the benefits of broadly spreading risks, but does have the advantage of information. Consumers do observe the type and behavior of their neighbors and social relations very closely, and have a strong incentive to monitor and punish any excessive risk taking by others in their neighborhood, for which they may bear the costs.

The same informational benefits underlie microfinance and startup loans within social networks. Financial institutions run very similar risks as insurers. Once a loan has been granted, a bank bears a good part of the risk of failure, which can induce excessive risk taking on behalf of their clients. If banks compensate this risk by requiring a higher risk premium, they are in danger of being too expensive for relatively solid low risk investors, and only attract high risk investors. For this reason, financial institutions require collateral to guarantee repayment in case of failure. Of course, the poor have no such collateral to offer, and thus lack access to financial

markets. This is a major impediment to their escape out of poverty at their own strength. Microfinance,⁷ world famous since Bangladesh's Grameen Bank and its founder Muhamad Yunus received the Nobel Peace Prize, introduces innovating financial techniques such as group-lending contracts to provide loans to the poor. These group-lending contracts have the borrower's neighbors or social relations as cosigners for their loans. Their incentive to closely monitor and sanction risk taking behavior and exclusion of too risky borrowers remedies both above information problems. The bulk of these microfinance loans support small scale entrepreneurship by the poor, and offers an opportunity to aspire future prosperity. Similarly, startups of small businesses by e.g. ethnic minorities in developed economies, e.g. night shops, are often financed by collected savings of the community. The monitoring of behavior and power of a social network to sanction misbehavior make this a viable mechanism if social networks are sufficiently strong and sanctions such as expulsion are sufficiently costly.

Cole, Mailath and Postlewaite (1998) show that the power of a group or network to enforce a social norm is proportional to the cost of expulsion from that group or network, i.e. the foregone opportunities if all social relationships to the trespasser are cut by those who guard the norm. Whether or not the relative costs of expulsion are higher for the poor or the rich, is uncertain. As suggested above (and by Cole, Mailath and Postlewaite (1998)), assortative network formation allocates the most valuable social relationships to those who already have the most resources. This could suggest that the best off also have the best means to warrant proper behavior. However, one should also consider the outside option. If more successful consumers find it easier to form new social relationships with others after being expelled, or are less in need of such a relationships, then community social norms can be more stringent for the poor. Clearly, if cultural differences make the formation of new relationships more difficult, then social norms can be expected stronger in cultural minorities. This power of networks to impose social norms can be an important factor in solving problems of cooperation and collective action, and a key element in the emancipation and prosperity of social groups.

Yet, the same strong social networks can also impose norms and behavior on their members which are an impediment to economic prosperity. Strong social norms which require that prosperous individuals share with the community can generate (instead of solve) a public good problem in a community. An individual who anticipates that any future prosperity is to be shared with the community (or faces the cost of social expulsion for enjoying the benefits himself), may face too low rewards to make an investment or effort worthwhile. Similarly, social norms which dictate that remittances sent home by emigrants must be socialized and consumed, can prevent important capital investments in developing economies by the family of the emigrant.

Austen-Smith and Fryer (2005) analyze 'Acting white', a social mechanism which explicitly discourages and sanctions investments in human capital by members of the own social group. Their analysis aims to explain the educational under-

7. See e.g. Morduch (1999) for a survey.

performance of black children in the U.S., which is particularly dramatic in strongly segregated areas. Their key insight is that education functions for black children as a signal to two audiences: i) high education levels warrant the youngster's productivity and quality to future employers, but ii) low education levels warrant a student's loyalty to her social network and neighborhood. In times of racial segregation laws, all black consumers - doctors, craftsmen and day laborers alike - were forced to live together in the same neighborhood and would thus tend mingle socially. The abolishment of segregation laws allowed the most talented black to migrate out of the black neighborhoods into middle class areas, and establish a social network with other middle class consumers. In an attempt to keep the most talented in their social network, a detrimental social norm has spread in some black neighborhoods which sanctions well performing black students, accusing them of 'acting white' and desiring to leave the old neighborhood. Well performing young blacks are punished socially, suffer from lower popularity, and are induced to regain the respect of their peers by bad school performance as a proof of loyalty to the community. Fryer and Torelli (2009) show that the social costs (in terms of popularity among peers) of high educational achievement are significantly higher for black students (with their black peers) than for white students (with their white peers). Moreover, this effect is higher in public schools, and non-existent among black in private schools (i.e. blacks already distant from the old black neighborhoods), and is nearly three times higher than the overall sample average in schools with less than 20% of students black. This example shows how social networks can restrain their members from achieving economic prosperity in order to avoid social mobility of their best elements out of the network or neighborhood.

A second example of how social networks can drive their members into poverty comes from the analysis of cults and sects by Iannaccone (1992), and a striking illustration of these mechanisms for the case of ultra-orthodox Jews by Berman (2000). European Jews traditionally - and by necessity - lived in closed communities and shared a strong and apparently conservative culture. Yet, traditional Jewish culture was far less time consuming and less stringent in terms of prescriptions for clothing, food, language, religious observance etc. than ultra-orthodox culture today. Ultra-orthodox Judaism originated about two centuries ago, at a time when European society dropped many barriers which prevented Jews from taking part in political and economic life, opening up new opportunities for Jews. Following Iannaccone (1992), Berman rationalizes the particularities of ultra-orthodox Jewish culture from a club good approach.⁸ The club good here is a very strong community with exceptionally high levels of mutual help, visits to the sick in kind help etc., all of which are very time consuming to provide. By non-rivalry, this club good suffers from the archetypical problem of a public good: underprovision. Each individual bears the full costs of her investments into the community, but fails to fully take into account the benefits of her efforts bestowed on others. The classical economic solution for such an underprovision of a club good is to charge membership fees and use the revenues to subsidize contribution to the club good. However, if certain strong groups find monitoring difficult or explicit incentive

8. Club goods are defined a goods whose consumption is excludable and non-rivalrous.

schemes undesired, they can use of another range of instruments, demonstrated by Iannaccone in the context of cults and sects. First, instead of subsidizing the investment of time into the group, they can 'tax' the time spent outside the group. This is typically achieved by requiring group members to wear a particularly distinctive clothing style, adopt a particular language and by imposing stringent dietary restrictions. All these discourage social interactions with 'outsiders', and are a common feature of radical religious groups (ultra-orthodox Jews, radical Muslims, Amish, Hare Krishna), radical political groups (anarchist squatters) and some sub-cultural entities. Note that distrust or aggression of the majority population towards this group only discourages relations outside the group more, and thus enhances the power of the group to enforce more group discipline and contributions. The ban of the niqab, as instituted in several Western European countries, seems particularly ineffective from this perspective. A second mechanism is screening: a group requires a range of costly behaviors to ensure that only the most devoted wish to self-select into the group. Ultra-orthodox Jews spend a good part of their life in yeshiva school, a full time school for study of the holy scriptures which proves to contribute very little to the formation of human capital, at least as far as it is valued on the labor market. Rather, yeshiva school seems a conspicuous way of foregoing human capital investments. This interpretation is supported by a great natural experiment in Israel, where ultra-orthodox politicians managed to secure an exemption from military service of full time yeshiva students until the age of 41. The result was a dramatic increase in full-time yeshiva attendance by ultra-orthodox men between 25 and 54 years old from 41% in 1980 to 60% in 1996, with a modal age of leaving yeshiva well above 41. The increased benefits of group membership implied that a greater sacrifice was required from those devoted to the group in order to distinguish themselves from potential freeriders. These levels were unprecedented in Jewish history and had grave social and economic consequences because most families with a father in yeshiva live in poverty and of welfare benefits. Moreover, ultra-orthodox have very high fertility rates (on average 7,6 per woman in the 1990's), which make their poverty and welfare dependence a growing challenge for the Israeli welfare state.

In both the case of 'acting white' and ultra-orthodoxy, foregoing economic opportunities functions as a way to prove loyalty to the group. In the former, the group imposes such a sacrifice to prohibit its best members from leaving, while in the latter it prevents worse individuals (free riders) from entering. In both cases, the mechanism has a detrimental economic impact on communities. The example of the exemption of military service, analyzed by Berman as a form of subsidy, demonstrates that poverty alleviating policies should properly take into account the social mechanisms which drive communities into poverty. In the latter case, the theory suggests e.g. that an increase of welfare benefits for fathers of large households in yeshiva school is likely to induce the community to require still greater sacrifices from its members. If such a measure makes yeshiva school more attractive to all, truly loyal group members must exert greater sacrifices to distinguish themselves from free riders.

3 CONCLUSIONS

Economic agents do not live in a social void or in homogeneous markets, but in complex social realities. The formal analysis of social networks and cultural processes provides economic theorist with a whole new set of tools to understand poverty and social and economic inequality, and presents a new collection of challenges. Policies aimed at the reduction of poverty and inequality should take these social mechanisms into account and even exploit them.

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