

The Organ–Dilemma

- A Plea for a Market Solution -

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1 The Facts

The number of available cadaver transplants in Germany has been constant for several years in spite of great efforts to promote cadaver donations. The quantity of donated organs is insufficient to match demand. The number of people on the waiting lists for an organ increased from 8,600 at the end of 1995 to about 11,000 at the end of 2000 (according to Eurotransplant).

The situation in the US is similar. Cadaveric donations moved slightly upwards (from 4,509 at the end of 1990 to 5,849 at the end of 1999) thus being also insufficient to match the significantly higher and (in recent years) faster growing demand. The waiting list increased from nearly 22,000 patients at the end of 1990 to 72,000 at the end of 1999. For many on the waiting list this gap between “supply” and demand is tantamount to death. About 6,1000 patients died in the USA in 1999 while being on a waiting list for a human organ.

The ratio between patients waiting for an organ and cadaver donations is about 3.5:1 in Germany and reaches 12:1 in the US. The German ratio is even worse for kidneys. According to the “Deutsche Stiftung Organtransplantation” (DSO, German Foundation for Organtransplantation) 12,000 persons are currently waiting for a kidney in Germany¹. The DSO estimates an annual need of 4,500 donated kidneys to provide treatment to the most urgent cases and to shorten the waiting list at the same time. Between 1995 and 2000 about 1,900 cadaveric kidneys were transplanted each year.

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¹The numbers reported by Eurotransplant are a bit lower.

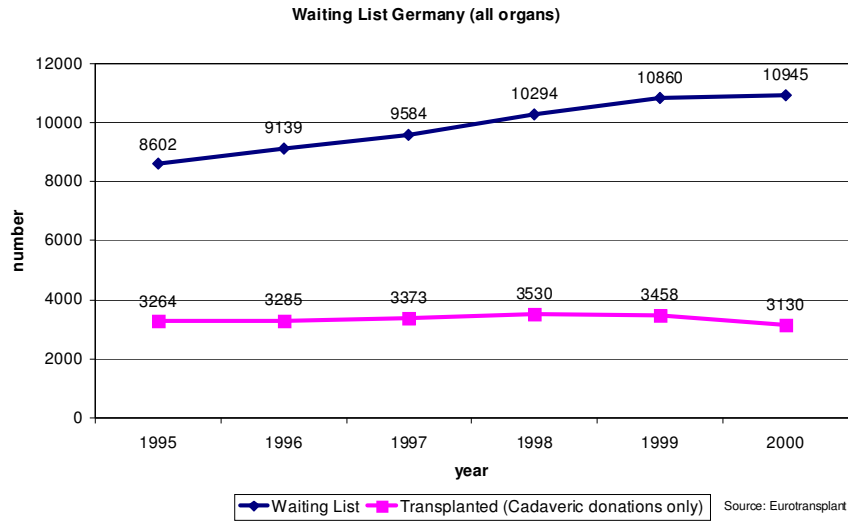


Figure 1: Waiting list Germany, all organs

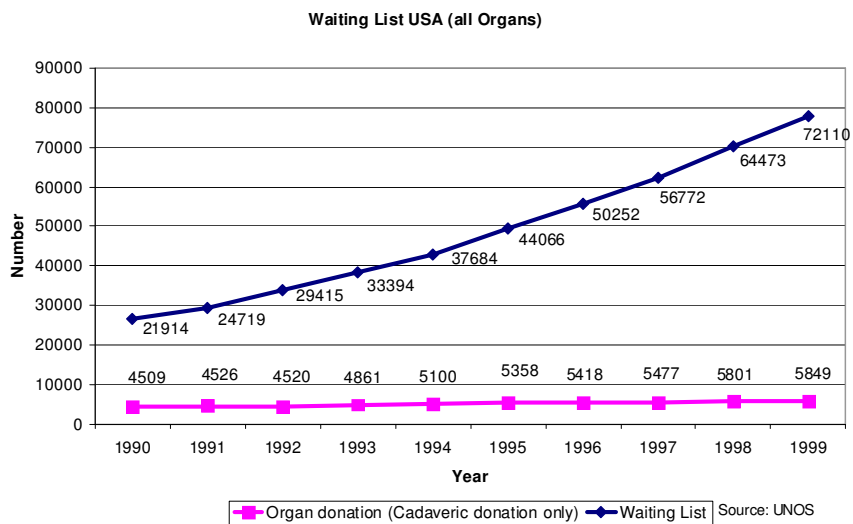


Figure 2: Waiting list USA, all organs

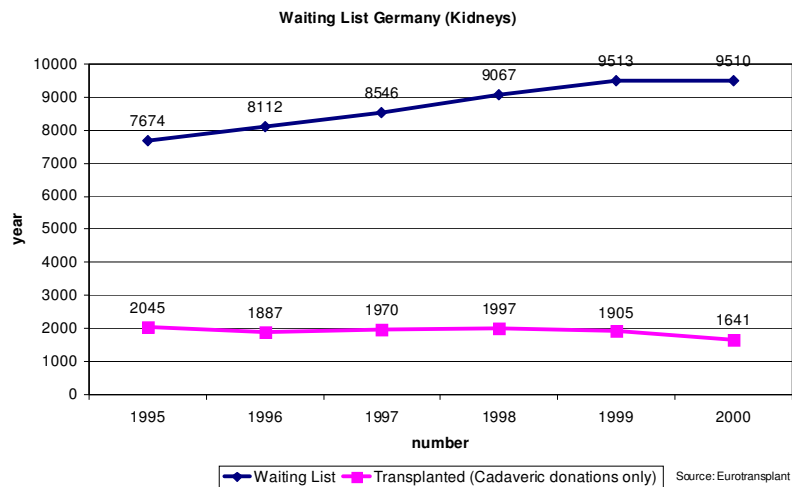


Figure 3: Waiting list Germany, kidneys

The problem is more than obvious. The urgent requests that Germans give the permission to remove their organs in case of premature death have mostly failed. Requests addressed to family members of the deceased have not been successful either. Physicians and economists have been developing criteria to set up an equitable procedure of allocation of available organs in this situation of scarcity. These are important criteria to avoid arbitrariness and chance in the distribution process of the “scarce goods”. But these criteria cannot solve the underlying problem.

It is well known that organs are available on a black market. Reports about black markets regularly appear in the media. We confine ourselves to the confirmed reports of physicians who often have to treat the complications that the recipients incur at home after a transplantation “abroad”. These reports show the prototype of a black market as described in standard economics textbooks (cf. Daul et al 1996, Abouna et al 1990). The buyers have to pay high prices. Middlemen dominate the market and take a lion’s share of all payments. Exploitation and fraud prevail. The organ donor is not sufficiently informed about the risks (if he agreed at all and the organ is not “stolen”). Agreed upon payments are not made to their full amount. In cases in which complications occur there is no medical follow-up for the donor. Former contact persons are untraceable or refuse any help. There is a similar story for the buyer. Shortly before the required operation, payments are raised in an extortionate way. After the transplantation the recipient is sent home as fast as possible. There is hardly any follow-up medical care for the recipient. In addition, as in illicit work of the “usual” type, inferior quality and botching of any kind is observed. The organs are

infected, they do not match with the recipient, the transplantation is performed badly. Many complications arise.

These are problems of a black market per se and these problems are only partly based on badly qualified physicians. At the beginning of the 1990ies, Kazuo Ota, at that time head of the “Japan Society of Transplantation”, performed at least 13 commercially motivated kidney transplantations. The transplants were deemed unfit by US transplant units (one came from a donor who was tested positive for the hepatitis C virus, another was 70-years-old)(Ross 1995).

We have to take another close look at the supply side. Who donated the organs? Were the organs donated voluntarily? The New York Times (11.11.2001) reported that Chinese prisons and hospitals strike a good bargain with organs taken from the large quantity of executed prisoners. In other cases, middlemen or other persons, e.g. members of the family which receives the payment put pressure on the donor. Even these objectionable practices would not be able to even close half-way the gap between “supply” and demand.

2 Voluntary Contracts

In this paper, we try to argue for a market solution or, to be more precise, we launch a plea for a controlled and regulated market. A market in which supply and demand for organs is based on market prices. Such a market solution is prohibited in every civilized country. With a view on the horrible reports on black markets in the Third World, this ban doesn't seem absurd. How could one argue for a market solution?

The economic system of nearly all countries in the Western world is based on the idea of voluntary, mutually beneficial contracts. If two economic agents agree on an exchange among commodities (or more conveniently: on commodities in exchange for money), then such a transaction should not be impeded. Is this a valid argument? In the case of negative external effects, putting an undue burden on a third party or the society as a whole could justify a ban on such transactions. However many economic actions generate harmful or disturbing effects for society without being banned “automatically”. Do these situations bear any similarity to the buying and selling of human organs?

Strictly speaking, only two persons (and in particular cases also some of their relatives) are involved. If they agree to an exchange “organ for money”, what kind of argument could prevent such a contract? Maybe the argument that the person who trades in his organ does not properly foresee the consequences of his action. This argument though very serious could be weakened by setting up an independent institution whose task

it would be to inform the potential donor about all possible consequences. Of course, giving away an organ induces a higher risk than donating blood, which is mostly given for altruistic reasons. But according to the DSO, the risk of death concerning the withdrawal of a kidney is about 0.03-0.06% . In about 1% of the operations major complications arise, caused by the general risk of surgery and the special location of the kidney in the human body².

Paternalistic arguments could also be launched against contracts such as the acquisition of risky assets, which are not automatically nil and void from a legal point of view. Living related donation is vulnerable to the argument of an improper judgement of future consequences, too. If an unconcerned individual cannot properly judge the consequences of his or her decision to donate, would an emotionally attached relative not face the same problems a fortiori? Relatives are vulnerable to emotional pressures, especially in cases where alternative treatments of other kinds are not available.

Are human organs basically different from “normal” goods? In the light of Lancaster’s characteristics approach (1966) the answer to this question is clearly positive. Do organs thus belong to a completely different category? The answer is “yes” in the sense that a donated organ is once and forever lost for the donor. But how to judge a constellation in which a person sells one of two well functioning kidneys? Of course, society can decide to prohibit such contracts. It can decide that such contracts are not in accordance with human dignity. Human beings would turn into exploitable “organ farms”. Human beings as well as parts of the human being should be inalienable. What is the basis for this argument? Is it a paternalistic argument or is the main focus on negative externalities, too high to be tolerated by society under any circumstances? In any case, in the light of the alarming scarcity of organs an objection of this kind must be substantiated by convincing reasons. Voluntary and closely monitored live donations avoid a serious and controversial problem in connection with cadaveric donation, viz to give a scientifically and philosophically satisfying definition of when a human being is to be considered as clinically dead.

One of the controversial points in this discussion is that doctors could get an incentive to declare a patient as dead too early if the patient has organs that are deemed fit for transplantation. This incentive would become even stronger if the organs could be sold. To avoid this effect, Barnett et al. (1993) propose to hand the property rights to the organs over to the family members. Furthermore, the physician who declares the death of the patient should not be identifiable by the patient’s relatives so that side payments would be rendered impossible.

²The donor risk in liver transplantation is higher (New York Times, January 15. 2002). According to the DSO it is difficult to exactly specify this risk because of the vast progress in transplantation medicine. The risk is comparable to the risk of removing a part of the liver for other reasons.

Barnett and Kaserman (1995) demonstrate that the incentives for the physician are already important if there are no markets for organs at all. Organs are a scarce commodity which could be used as “costless” inputs in the hospital’s own, profit oriented transplantation division.

A rather straightforward objection against our suggestion to have a market for organs is the following: What should be done in cases where the donor or seller himself is in need of an organ, maybe because his remaining kidney is malfunctioning at some point in the future? There exists no problem in this scenario if the market solution works and the gap between supply and demand gets closed (please note the following remarks about advantages for rich people). If the gap cannot be closed the problem will be valid, indeed. For this case, we join Erin and Harris’s (1994) suggestion and give the donor a kind of priority claim in the organ allocation procedure. Only a minor proportion of the donors would be in need of an organ anyway; thus from an economic point of view this proposal seems to make sense. However, ethical considerations also support such a priority claim.

3 Exploitation of the Poor?

It is often argued that legalizing organ sales is synonymous to transforming the so-called Third World into a store for spare parts for the so-called rich. Of course, such a development would be unacceptable from an ethical point of view. The Indian physician K. C. Reddy worked at a hospital in Madras which performed transplantations with purchased kidneys in the 1980s. He points out (Reddy 1991) that poverty is part of the abominable realities in daily Indian life. “Nothing dehumanizes an individual more than poverty and his inability to provide for his family” (p. 177). He asks the question, what a man or a family should do when they cannot expect an improvement of their situation, neither through public authorities nor by society. Even in less dramatic situations the earnings from the sale of an organ could be used to alleviate the financial distress of families. Such payments could be used for the dowry of a sister or daughter, for the liquidation of debts, for the improvement of their own standard of living or for an improvement of the prospects of the children. Reddy asks if this motivation is wrongful. He asks whether the attainment of one of these goals would not, perhaps, cause a profound emotional satisfaction, a satisfaction as deep as one caused by donating an organ to a close relative. Radcliffe–Richards et al. (1998) state clearly: “If a father who saves his daughter’s life by giving her a kidney is altruistic, it is difficult to see why his selling a kidney to pay for some other operation to save her life should be thought less so” (p. 1951). We find this view rather convincing. One should at least give it some serious thought. Contrary to ordinary transactions, the motivation to accept money and the question what this money will buy, are taken into consideration. We also ask

whether some kind of indirect altruism is conceivable. By this we mean a utilization of the payment for altruistic purposes.

One objection to our proposal to legalize organ sales is that these sales would only occur under coercion. Sales would only take place in situations of great need and therefore necessarily lack voluntariness. A person not in distress would never consider the sale of a kidney, for example. We have to take this point seriously. However, we doubt the overall validity of this argument and refer again to the example from Radcliffe–Richards. If sales were prohibited in situations of great need, the father from that example would have no possibility to sell one of his kidneys. A person who is concerned about the prospects of her children normally is not in a situation of utmost need. Therefore, following the above argument, this person would face less objection to sell one of her organs, since in her case a higher degree of voluntariness is undoubtedly given.

However, this argument can be turned around. One can argue that the sale of a human organ to improve one’s standard of living or — to make the point even more acute — to buy a new car is really disgusting whereas the father from our example above can give good arguments for the sale of one of his kidneys. We think that it is almost impossible, at least problematic, to draw a clear-cut line between both voluntariness and involuntariness and between real hardship and the absence of distress.

Thomas Gutmann (University of Munich) and Walter Land (“Klinikum Großhadern”, University of Munich) made a milder, much less far-reaching proposal (Gutmann and Land 1999). They discussed the introduction of financial incentives. These incentives should be higher than the expenses incurred by the donor and the possible loss of earnings (opportunity costs). They refer to the concept of pain money or smart money (in German: “Schmerzensgeld”). The authors hope that these financial incentives would continue to foster an altruistically motivated donation and not a financially motivated one. In our opinion this proposal is an important first step towards the introduction of market prices, in an extremely mild and cautious form, however.

4 Intrinsic Motivation

Some argue that an introduction of markets and market prices will not close the still growing gap between “supply” and demand. People who in principle are willing to donate will end their willingness once financial compensation is involved (c.f. e.g. Barnett et al. 1993, Adams et al. 1999, Frey 1997). We do not deny that financial compensation may damage intrinsic motivation. In fact, some potential organ donors would be discouraged. Would this effect be significant for the majority of donors? This is an empirical question. We don’t know the answer. The argument has, however, to be

taken seriously. Seen from a different angle it is said, that in Asian culture the sale of an organ is much more acceptable than cadaveric donation. It is added that the above argument typically stems from a Western viewpoint which is not shared in larger parts of Asia. Furthermore it remains an empirical fact that altruistically motivated donations are not available in a sufficiently high quantity. And it is questionable whether this would ever be the case. A stronger incentive than altruism alone is obviously needed (Harvey 1990).

Wouldn't it be possible to respect and preserve the altruistic motivation of a donor and to give this donor the opportunity to do a "good deed" by paying him for his organ and at the same time offering him to donate this sum of money to a fund for organ transplants. This would come close to what one might call indirect altruism. On a market an organ would command a considerable price based on its scarcity value, a price which also for fairness reasons should not be a "quantité négligeable". These expenses would have to be added to the pure costs of transplantation of about 50,000 Euros. The creation of a fund would prove useful in the light of our proposal. On the other hand, it should be noted that the costs for dialysis in Germany (depending on the degree of sickness of the patient) vary between 23,000 and 45,000 Euros per year. Thus the costs of transplantation will pay off after a few years. And furthermore, the survival rate of a patient getting a graft with a good match is higher than the survival rate in case of long term hemodialysis.

Frey (1997) calls the crowding out of donors if others are paid for a similar act a "motivational spill-over effect". A strict separation of donor groups would avoid this phenomenon. The creation of a fund as we have suggested above would be in line with this argument. Those potential donors who are altruistically or intrinsically motivated would turn to an organization that invests the price for the organ obtained on the market into a fund. Those donors who are primarily commercially motivated would be administered strictly separated from this. It could, of course, also be a division within the organization we have just proposed.

Some people would no longer be willing to donate an organ because the option to get an organ on a market would now be available. This effect was observed in Kuwait among relatives who were no longer willing to donate a life organ (Abouna et al. 1990). This argument should be handled with care. If no appropriate organ is available, the relatives are willing to donate. They will most likely be willing to donate also if the needy person or his family is not able to afford the organ (they could also donate the money to the needy). There will probably exist a limit price where the original offer to donate will be declined and one will refer to the existing market.

Let us return to the question whether the rich would not do much better in our proposal. One has to distinguish between acquisition, allocation and distribution, respectively.

The primary issue is an insufficient supply of organs, a problem which, as we hope, would be mitigated through the adoption of financial incentives. In the present social market economy (“Soziale Marktwirtschaft”) the allocation of goods and services like drugs and surgery is only partly based on personal ability and willingness to pay. This procedure should also be followed in the distribution and financing of purchased organs. Loosely speaking the public health service as well as private health insurance companies should bear the costs. When comparing the costs of dialysis with the costs of transplantation, the insurance companies should prefer this policy, too.

5 Transparency and Scarcity Prices

We propose a market solution that should be executed with precisely defined procedural rules. Transparency and information as high as possible both for potential vendors and recipients should have absolute priority. The market should be organized and should function worldwide. More precisely, all countries who are willing to join and are willing to guarantee the desired procedural rules are welcome to participate. We are not afraid of an analogy with big worldwide operating commodity exchanges, exchanges where different qualities of goods are precisely defined and usually command different prices.

It should be a “*conditio sine qua non*” to analyze the state of health of the potential organ donor meticulously. We could imagine, similar to the case of bone marrow transplantation, the set-up of a database with worldwide access (see a similar proposal made by Richard Epstein (1997, p. 254)). Medical care both before and after a transplantation both for donor and recipient should meet the highest quality standards. This requirement should be obvious both on medical and social grounds. The quality of the “good” (the reader may excuse this expression) must be wholly identifiable. This would not only be to the advantage of the potential recipients, the prices obtained by the organ vendors also would be highly correlated with the measured quality, a typically economic argument.

Let us side-step a little and use Lancaster’s (1966) approach to clarify this point. Suppose the health care system provides about 50,000 Euros for the transplantation of a kidney, excluding costs for follow-up medical care. This is equivalent to costs of dialysis for a period of 3 to 5 years. Furthermore suppose that two or three attributes or characteristics are decisive for the state of health or quality of the organ under consideration. The largest demand would be for organs which fulfil these characteristics to the highest degree. These organs generate the highest utility for the potential buyer or recipient. “Goods” of inferior quality would only be demanded in situations of big scarcity.³ We believe that a worldwide operating institution should render larger

³This could — at least partly — question the objection that only persons with high risks would

scarcities an exception.

Titmuss (1971) concludes in his inquiry of the blood market that the adoption of a market system instead of an altruistic system lowers the quality of the collected blood. For a more detailed critique on Titmuss we refer to Arrow (1972) and Epstein (1997, especially chapter 11). Just one point. Pivotal to this issue is the asymmetrically distributed information about the true quality of the donated “object”. Organs are in a different category of commodities than blood. The significantly higher costs of an organ and the necessary medical examination make the additional costs incurred and the additional time necessary to alleviate the situation of information asymmetry justifiable.

Of course one could argue that organs of a lower quality would be traded at lower prices. It is questionable whether governmental authorities would buy such low-quality organs at all since these embody a significant risk of failure and a high probability of large follow-up costs. Privately insured buyers will supposedly act extremely risk-averse. This provides an incentive for a potential donor to care for his organ in order to reduce possible risks as much as possible. For situations of asymmetric information Akerlof (1970) showed a crowding out of good quality products by low quality products, respectively of honest dealers by fraudulent ones. This may well be the case for used cars. However, in questions of life or death supervisory authorities and concerned individuals act extremely risk-averse.⁴ On the other hand, Akerlof’s argument shows again how important it is that a market for organs be regulated and the quality of the “objects” identifiable. Victims of traffic accidents who signed a donor card must be examined within a very short period of time, quite often within hours. A market solution would leave sufficient time for the necessary medical examinations of the donor and would render possible an optimal timing for the transplantation to be carried out.

6 The Ethical Dimension

We referred above to the many negative effects of a black market for human organs. We would like to see a black market as small as possible. We know that our proposal will not be able to prevent it entirely. A regulated market, restricting the “benefits”

join the market, i.e. persons who primarily intend to buy drugs, alcohol or other narcotic substances.

⁴Risk-averse behaviour can be represented by a strictly concave utility curve. In such a case, an individual will always, utility-wise, prefer a quality index (or characteristics index) r with certainty to a probabilistic combination of a lower quality q and a higher quality s (i.e. $q < r < s$) when the probability for the low quality is “sufficiently” high. Furthermore (and this is economic jargon) a risk-averse individual always prefers a sure outcome r to a lottery ticket with outcomes q and s ($q < r < s$), having the same expected outcome or the sure prospect.

as far as possible to the donor and recipient, would certainly be an alternative to the morally unacceptable black market but also an alternative to the present status-quo. We started out this paper by pointing at the ever growing scarcity of supplied organs. An increasing number of patients in line for an organ does not get the urgently needed organ in time. Doesn't this fact alone provide a starting point for an ethically founded argument in favour of a market solution?

A common objection is the view that a trade in human organs from living donors degrades these donors to simple stores for spare parts, that these donors (and possibly all members of society) are stripped of their human dignity. Is the giving-up of a part of the body for money dehumanizing? The views on this question will be diverse. It seems to us that payment alone does not cause exploitation or degradation (Wilkinson and Garrad 1996; Erin and Harris 1994). "On the other hand", a growing number of persons has longer term prospects of survival only if they receive the needed organ in time. If a transparent market with fair prices would significantly raise the supply of transplantable organs, this would be a substantial success, hopefully also against the black market. This is only a second best solution, of course, but doesn't it fulfil the requirements of our society? The ideal solution, consisting of a sufficient number of voluntarily donated organs worldwide, obviously clashes with the real world.

Appendix: Markets for Organs? Results of a Questionnaire—Experimental Investigation

There are a lot of studies trying to determine the attitudes of some subgroups of the population concerning organ donation (some of the most recent: Pugliese et al. 2001, Gross et al 2000, Darr and Randhawa 1999, Omnell Persson et al 1998). The groups which are mostly under investigation are hospital staff or groups within the population that are underrepresented in terms of organ donation. The goal of these studies is to promote the willingness to donate, furthermore to promote requests to donate issued by hospital staff and requests to register suitable organs.

Adams et al (1999) and Pessemier et al (1977) analyze the problem in another way that is more interesting for us. They ask explicitly what the effect of financial incentives is on the willingness to donate an organ. Our study significantly goes beyond their work since our main focus is on living donors and not so much on cadaver organs. In some other respect, we examine more closely the base of the problem since we are interested in attitudes. Adams et al (1999) estimate a rudimentary supply function for human organs, more precisely the sale of the consent to remove organs after death. Both use prescribed answers in their questionnaire experiment.

1 Problem

We posed the following question to our students:

National and International Trade in Human Organs

According to your opinion should a trade in human organs be allowed? We think of a trade in the sense that a person can take the initiative, i.e. be perfectly free to sell e.g. one of his eyes or one of his kidneys for money to a so-called recipient. If the so called donor is, for example, living in great poverty then this exchange could be mutually beneficial: the donor would suffer some bodily encroachment while experiencing a material improvement of his situation which could be substantial. As a result of the trade the hitherto blind or suffering renal disease patient could lead a normal life, at least to some extent.

This example is only meant to illustrate the question and should not influence the formation of your opinion in any way. Please explain your position in a few words.

This relatively loosely put question allows to determine the variety and topicality of potential arguments (Noelle–Neumann and Petersen 2000, pp. 128). The students formulated their own answers. This procedure eliminates most of the unconscious influence on the part of the interviewer when recording the answers. The students possess a similar educational background and can be considered as eloquent. A disadvantage of this process is that probants may be too quick in their formulation (too fast or not thought out carefully) or too general (for example, they just write down: *‘I refuse this proposal on ethical grounds’*). The necessary classification of the answers generates results which possess a certain degree of imprecision.

2 Description of the Population

During the winter term 1996/97 194 students participated in the questionnaire experiments; two of them did not answer the question of whether to legalize organ trade or not. In the winter term 1998/99 178 students participated; three gave no answer. The most recent study was done in the winter term 2000/01. In this year, all 192 students supplied an answer. To sum up there are 559 fully answered questionnaires. The interviewees studied economics or business administration at Osnabrück University and attended the course “VWL I” (German abbreviation for “economics 1”). This microeconomics course is obligatory for economics and business administration students in their undergraduate studies. For most of the students, this is the first class in economics. Between any two of the investigations, there was an interval of two years so that with very high probability no student was interviewed more than once. Also, the two–year interval between any two experiments rendered the period under examination much longer.

The demographic composition of the population had been stable over the years. The majority of the probants was male (59%). The average age was 23 years, the greater number was enrolled in business administration (89%), about 6% were economics students, the rest were students with economics as a minor subject. Only 11% of the students came from a worker’s household, the great majority of about 81% grew up in the household of an employee, a public servant or a self–employed person. 58% regularly read a daily newspaper.

This demographic composition made it more than obvious that there was a large difference to the German population as a whole. The mean age (the median age was identical) was relatively low. We could expect that many of the students had not intensively thought about questions of sickness, permanent bodily handicap or death before. The students were better educated than the average person of their age. Therefore, we could assume a higher degree of open–mindedness for our problem and its context.

year	acceptance of trade	undecided	rejection of trade	Σ
winter term 96/97	38,5%	6,8%	54,7%	100%
winter term 98/99	37,1%	5,7%	57,1%	100%
winter term 00/01	35,4%	4,2%	60,4%	100%
sum:	37,0%	5,5%	57,4%	100%

Table 1: **Results of the investigation**

As stated above, the majority of our students studied business administration. Persons studying this subject are supposed to accept market economies, free trade and entrepreneurship to a higher degree than the average citizen. Altogether, one would guess that this could lead to a bias towards an acceptance of a market for organs.

3 Results

The answers and explanations, written down by the students, were classified by three categories, namely “*acceptance of trade*”, “*undecided*” and “*rejection of trade*”. A fraction of the students ended their statements with a clear “yes”, a clear “no” or “I’m undecided”. The rest was classified analogously (i.e. capturing the general meaning as precisely as possible) by the evaluating person. All questionnaires within each class were classified by the same person, to guarantee a similar evaluation of the answers. Altogether, two persons worked on the assessments. They also made a list of the individual arguments given by the students, which follows in section 4 of this Appendix.

The results of the investigation are shown in Table 1.

The proposal to allow an international trade in human organs was rejected in each year. The distribution of the answers is remarkably stable over the years (under the restriction, of course, that most of the answers had to be classified by the evaluating person). A χ^2 -test of homogeneity of the three multinomial distributions yielded a value of the test statistic of 1.993, with 4 degrees of freedom. The corresponding p -value is 0.737. We could not reject the hypothesis of identical distributions at tolerable significance levels. With this result in the back, we aggregated the data over the three years and searched for influence of one or several demographic characteristics. Interestingly, despite this result the data seems to show a slight tendency towards a greater rejection of trade (from 54.7% up to 60.4%).

With all reservations in mind, a search for influencing factors was done. We started with simple tests which indicated that occupation before university education and the regular reading of a daily newspaper could have an influence. Furthermore, the sex of

the student seemed to be influential as well. Obviously, employment before university education and age of the student are connected. Men have to do a military or civil service in Germany. Thus the sex and the age of the students are connected, too. Indeed, women are on an average one year younger (average: 22.4 years, median: 22 years) than men (average: 23.3 years, median: 23 years). The standard deviation is in each case 2 years.

We then tried to specify a multinomial logit model (Greene 2000, pp. 859). Table 2 presents a model which includes all demographic characteristics as explanatory variables. It includes the gender of our probands, their age, whether they were employed before their studies or not and if they were regularly reading a daily newspaper. In addition, potential interaction effects of the variables are included. Reference category of the dependent variable is the rejection of trade. When interpreting the model one has to pay attention to the coding of the dummy variables.

The probability to accept the trade relative to the reference category of rejection of trade is higher for men (dummy sex = 1) than for women (dummy sex = 0). The effect is large but insignificant. The same holds for the probability to be undecided whether to allow organ trade or not. The isolated effect of age is negative relative to the reference category. Hence older students are more likely to reject the proposal to legalize organ trade. Various other effects are shown in Table 2.

Since most of the coefficients were insignificant, the model was reduced. This model is shown in Table 3. The coefficients of the gender variable and the dummy for occupation remain insignificant as long as the (always significant) age remains as an explanatory variable in the model. The effect of age is small but highly significant. A higher age reduces the probability to accept the proposal or be undecided relative to the probability to reject it. The effect of a newspaper is only significant in the case of accepting the trade. Not regularly reading a daily newspaper increases the probability to accept the trade in relation to the probability of refusing the proposal.

The results seems to make sense and their interpretation is straightforward. Persons who are older probably possess a greater experience of life. This will increase their scepticism towards the proposal, leading them to a position where they reject rather than accept the proposal. A regular reader of a daily newspaper must have heard about illegal trade in human organs and its negative concomitant effects that are reported from time to time. In the same way, this reader should have developed a higher degree of sensitivity towards poverty and exploitation in the so-called Third World.

Table 2: Model including all characteristics

		β	standard error	Wald	degrees of freedom	significance level	e^β
Acceptance	DS	2.565	1.782	2.072	1	0.150	13.003
	AGE	-0.0324	0.010	10.491	1	0.001	0.968
	DE	-2.488	1.786	1.941	1	0.164	0.0831
	DN	0.430	0.189	5.167	1	0.023	1.537
	DS * AGE	-0.0987	0.078	1.615	1	0.204	0.906
	AGE * DE	0.110	0.078	1.998	1	0.158	1.116
Undecided	DS	3.836	4.909	0.611	1	0.435	46.342
	AGE	-0.129	0.027	23.319	1	0.000	0.879
	DE	-0.540	4.384	0.015	1	0.902	0.583
	DN	-0.0334	0.414	0.006	1	0.936	0.967
	DS * AGE	-0.155	0.221	0.492	1	0.483	0.856
	AGE * DE	0.0475	0.194	0.060	1	0.807	1.049

Pseudo-R²: Cox and Snell: 0.411; Nagelkerke: 0.463; McFadden: 0.241

Variables: *DS* - Dummy Sex (0 = female), *DE* - Dummy Employment before study (0 = Yes), *DN* - Dummy Regular reader of a daily newspaper (0 = Yes).

Table 3: Reduced Model

characteristic		β	standard error	Wald	degrees of freedom	significance level	e^β
Acceptance	Age	-0.0262	0.005	25.649	1	0.000	0.974
	Dummy newspaper	0.366	0.180	4.116	1	0.042	1.442
Undecided	Age	-0.105	0.011	92.602	1	0.000	0.900
	Dummy newspaper	-0.0162	0.399	0.002	1	0.968	0.984

Pseudo-R²: Cox and Snell: 0.420; Nagelkerke: 0.472; McFadden: 0.248

4 List of Arguments

The interviewees were asked to accept or reject our proposal to introduce a market for organs. They were also asked to give a short explanation of their decision. The great majority followed our plea. The same person who classified the answers extracted the arguments of the students and assembled them in a sensible way. Since different students choose different words for the same arguments there was a risk of misclassifying and misunderstanding their answers. For this reason we did not investigate the influence of demographic characteristics on the choice of arguments. We can state that the students were serious in their answers and took pains when formulating their explanations.

The arguments (cf. the following list) can be divided into four categories: (a) students base their judgements on ethical arguments; (b) they call for a regulated market; (c) they foresee exploitation and crime; (d) or they propose a system of charitable donations as an alternative to the market.

Below is a list of the most frequent arguments of our students. In parentheses, we state the number of students who chose this answer (of course, this number can only be an approximation and should better be understood as an indicator of the prevalence of a specific argument).

Ethical reasons

- Everyone should decide for himself what is best for him. In other words, whether he wants to take part in such a trade or not (82)
- The trade is to be rejected on ethical, moral or religious grounds (65)
- Money cannot make up for a once healthy body (36)
- Both parties benefit (26)
- It is an opportunity to help and/or to save lives (24)

Checks and conditions

- Based on voluntariness and without coercion (89)
- Controlled trade to exclude a lasting impairment of health of the donor (65)
- Potential donors must be sufficiently informed about the risks and be sound in mind (11)

Donation as an alternative

- Withdrawal of an organ only after death, this renders trade unnecessary (44)
- One should only allow charitable organ donations (39)

Exploitation and criminality

- This will give rise to an organ mafia and criminal trade with abuse, nonvoluntary extraction of organs, rape and extortion (79)
- Exploitation of socially disadvantaged people and nations (67)
- There is no voluntariness since the sale occurs in situations of poverty and distress (54)
- Two-class society and medical care: Only the rich would be able to buy organs, the poor would be disadvantaged (44)
- The poor would become a spare parts store for the rich (27)

One important point in the arguments pro and con is the role of the market: one group of students views the market as basically possible and desirable that the market should be allowed on liberal grounds. However, such a market should on no account be unregulated. These students clearly emphasize that potential adverse effects should by all means be avoided through checks and regulation.

The members of the other group view these adverse effects as inevitable. Abuse is not preventable. For them the liberal viewpoint is deficient, a market is impossible since donors live in poverty and distress. This group is in accordance with most of the literature on this topic.

The focus on the donor is remarkable. The objections are based on failures on the supply side of the market. The neediness of the recipient is almost totally ignored and hardly mentioned. Quite often one can find the attitude that an improvement of the recipient, i.e. the rich, must be accompanied by an equally large improvement of the donor, i.e. the poor. The Pareto principle is regarded as insufficient in this case. We have to admit that the question which we posed generates a bit of a bias, since the donor is mentioned more often than the recipient. But this focus on the donor is well reflected in the literature on this problem.

A minority of our students tries to propose a “third way”, shifting the focus of the debate on a gratuitous exchange (i.e. donations) and cadaveric organ donation.

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