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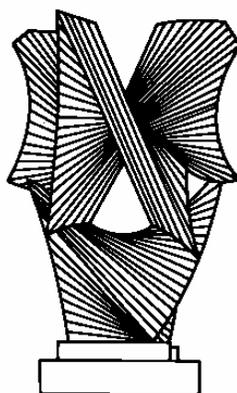
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**THE LAW SCHOOL
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The Human and Economic Dimensions of Altruism: The Case of Organ Transplantation

Richard A. Epstein*

ABSTRACT

This paper analyzes three issues critical to understanding the chronic shortage in organs. Section 2 develops a simple economic model of altruism that helps explain how markets with altruistic participants operate in ways similar to ordinary economic markets, but produce an equilibrium position in which more organs are transferred at lower cash prices. Section 3 examines and rejects the various arguments used to undermine the neoclassical arguments in the first section. Section 4 looks at ways to expand the supply of organs: directed donations within families and among friends, solicited organs via matchingdonors.com, donor-recipient pairs, and LifeSharers.

1. INTRODUCTION: CAN ALTRUISM SUFFICE?

The current regime of organ transplantation in the United States is governed by the National Organ Transplantation Act (“NOTA”), whose central provision makes it illegal to “acquire, receive, or otherwise transfer” an organ to another person for “valuable consideration.”¹ NOTA imposes criminal sanctions on anyone who either provides or receives these organs. Evidently, the statutory drafters consciously chose the phrase “valuable consideration” to prevent obvious evasions of the statute by substituting for cash other goods and services, such as treasury bills, shares, or free airline tickets.

Under NOTA’s stated rationalization, the driving force behind organ donation should be either disinterested benevolence or altruism (see Epstein 1997, p. 237, noting

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¹ National Organ Transplant Act § 301(a), 42 U.S.C. § 274e(a) (2006). The relevant provisions of NOTA read:

§ 274e. Prohibition of organ purchases

(a) Prohibition. It shall be unlawful for any person to knowingly acquire, receive, or otherwise transfer any human organ for valuable consideration for use in human transplantation if the transfer affects interstate commerce.

² U.S.C. § 274e(a)-(c) (2006).

For the proposed statutory exception for organ swaps, see *infra* at note .

that “the current altruistic policy overestimates the ability of detached generosity to meet the demand for organ transplants and thus tolerates inexcusable organ shortages . . . we should all be better off if altruism were confined to a more modest role: as a reason for private charity for those in need”). The defenders of that prohibition insist that in this area, unlike so many others, the use of market exchanges will undermine the trust and confidence that have encouraged today’s high level of organ donations from both deceased and live donors. They constantly refrain that the use of cash and other forms of inducement will undermine the integrity of the medical profession, will crowd out altruistic donations, will lead to inferior forms of social interactions within families and between people, and will result in the systematic exploitation of the poor and vulnerable (see, for example, Rothman and Rothman 2006). Indeed, some defenses of the status quo attach a near-theological significance to how dialysis places people in closer contact with their own bodies (see, for example, Meilaender 2006, p.25, arguing that the mistake of the promarket forces is that they believe in “[d]eath as a problem to be solved”).²

Arguments of this sort have dominated the public policy debate, so that even modest proposals to expand the supply of organs, such as those I have helped draft (for example, Gaston et al. 2006),³ are met with stern rebukes by the champions of altruism (see, for example, Fox 2006). Yet even here, it is altruism of a peculiar kind. To be sure, everyone is in favor of altruism by cadaveric donors to whom the organs can do no good. But altruism receives a more mixed response from living donors. Transactions within families and between close friends are strongly encouraged. But, as will become evident, altruism toward strangers is greeted with deep suspicion on the grounds that it is somehow unethical, an unnatural act, or merely a cloak for some hidden provision of cash

2 For a forceful response, see Hippen (2006, p. 48):

For [my dialysis patients], the endurance of thrice-weekly dialysis for 3 to 4 hours a session, the insertion of two 15-gauge needles into their arm or thigh, is a painful reminder of how death is not a problem to be solved, but merely averted, on a day-to-day basis. When things are working well, dialysis is tolerable, and indeed is stoically tolerated by hundreds of thousands of people in this country every day. When things are not working well, when a dialysis patient’s tether to life is compromised (by a catheter infection, a clotted access, a missed treatment, or worse), they can expect unscheduled disruptions of their already difficult lives, often of unpredictable durations. Here, antibiotics, catheter exchanges, access declots, emergency room visits for pulmonary edema, hypertensive urgency, life-threatening hyperkalemia, a myocardial infarction, or a stroke, are not unusual.

3 The coauthors include one nephrologist, Robert Gaston, two kidney surgeons, Gabriel Danovitch and Arthus Matas; one philosopher, Jeffrey Kahn, and one lawyer, myself.

or other benefit (see, for example, Caplan, Zink, and Wertlieb 2004; Zink et al. 2005; Steinbrook 2005). But in the midst of these complex attitudes toward altruism, neither the qualified proponents of altruism and nor the skeptics of its efficacy have made little systematic effort to understand its behavioral implications. How does altruism influence the quantity of goods and services that are provided, and their associated prices?

One common assumption of standard microeconomic theory, dating back at least to Adam Smith, is that individual actors are motivated by self-interest to better their positions in all social settings. Smith's assumptions about self-interest work tolerably well in the familiar markets for capital, goods and standard services, but probably require some qualification as we move out of business contexts. The hard-nosed trader who makes his fortune in dealing with strangers will typically adopt a different personal stance in distributing those resources within his family circle. There the obvious interdependence of utility leads to sharing behavior where persons perceive the benefit that they confer on others as relevant to their own sense of personal well-being. It is therefore not surprising that with respect to risky organ transplants, such as those which involve transplanting a portion of the liver, typically the only donors willing to undertake this procedure are the parents and other close relations to the donee (which in this context is an accurate term) (see Meckler 2007 for a vivid account of the risks of liver transplantation).

At the same time, however, altruistic behavior is not necessarily limited to close family connections. A uniform theory of relentless individual (or familial) self-interest leaves us at a loss to explain either heroic acts of rescue (see Hyman 2005 for exhaustive documentation of the frequent rescue attempts) or charitable assistance to the poor, bereft, and disabled. With organ donations, a note of caution is in order: while individual acts of rescue offer some clue as to individual generosity, studies of the activities nonprofit organizations are beside the point. Those models all start with the sensible assumption that charitable organizations can attract donations and volunteer support only if they ban distributions from the organization to its individual members in order to secure contributions from outsiders (see, for example, Hansmann 1980; Glaeser and Shleifer 2001). None of these institutional issues matter in a world of organ donations. The super-rich may be able to funnel billions of dollars into charitable gifts for vaccines,

medicines and hospital beds, but each can give at most one kidney during life, and a very small number of organs, assuming that they are still useable, at death. The altruism needed for organ donation is far more elusive and decentralized. It must motivate many individuals, each of whom can make at most a one-time, small contribution to any overall reduction in the organ shortage.

Yet such generosity does occur. Directed donations—the gifts of kidneys within families and between friends—are not uncommon, even with NOTA’s prohibition against transfers for valuable consideration, and even in the face of resistance for the transplantation establishment. Yet as the level of personal connections gets weaker, the rate of altruistic behavior also declines. Most sick people participate in clinical trials to gain the best possible care for themselves, not for the advancement of science (Menikoff and Richards 2006). Detached generosity is hard to come by in persons in distress. However, healthier people have a larger personal psychological cushion, and should on average be a bit more generous with their time, money and body. Even so, altruism is not a trait capable of major expansion either by private exhortation, social tribute and moral praise. These tactics may have induced some increase in supply, but the dramatic and growing shortages of available organs, especially kidneys, for transplantation indicate that these campaigns are woefully insufficient to close the gap.

The current statistics are grim and getting grimmer. The misnamed United Network for Organ Sharing (UNOS) (sorry, you can’t share kidneys, even if you can transplant half a liver to one donee) gives living proof of that on its web page.⁴ It is now well known that every day, many people on the waiting list, about 18 per day, die for want of a transplant, for a total of about 6500 per year (HRSA 2003). That figure does not include those individuals who have been removed from the UNOS list because they have become too sick for transplantation, or those who never made it to the list in the first place, probably a smaller number. Nor do the numbers reflect the anticipated increase in demand, owing to the higher prevalence of diabetes and high blood pressure in an ageing population.

⁴ Waiting list candidates 95,345 as of 03/08/2007
Transplants January – December 2006 28,923 as of 03/02/2007
Donors January – December 2006 14,743 as of 03/02/2007
<http://www.unos.org>.

As of August 31, 2007, the total waiting list included 103, 74 organs, of whom 77, 159 people were waiting for kidneys, 17,247 for livers, and others for pancreases, hearts or organ combinations (OPTN 2007). The kidney waiting list is up nearly 7,000 people since March 2007. See Table 1 for the numbers as of January 11, 2008.

Table 1. Number of patients on waiting lists for organs

All Organs	Kidney	Liver	Pancreas	Kidney / Pancreas
104,771	78,381	17,143	1,649	2,342
	Heart	Lung	Heart / Lung	Intestine
	2,694	2,237	103	222

<http://www.unos.org/data/default.asp>

In most instances, the common proposals for reform stress cadaveric kidneys in large measure because they do not involve cutting open one living person to help another. The thought here is that people give willingly to others when they have nothing to lose themselves. But the situation is in reality far more complicated than this. The suitable organs often come from young people who have suffered traumatic deaths. Whether or not they have issued instructions to allow organ transplants, the blunt truth is that these transplants do not take place unless all family members with a social stake in the issue sign off. A system of multiple vetoes, to use Judith Areen’s term, dominates this area, and reduces the likelihood of these transplants, under any circumstances. Some writers have proposed using the controversial doctrine of presumed consent to increase the supply of usable cadaveric kidneys (see, for example, Howard 2007; but see Veatch 2006, pp. 11-12, calling it the worst form of “conscription”). But even if all cadaveric kidneys were harvested, the waiting list would continue to grow,⁵ as the population ages and the incidence of certain key chronic diseases related to renal failure, such as diabetes, expands (see, for example, Zwillich (2006)). Earlier transplantations are on average more

⁵ Sue McDiarmid, the current UNOS President, recently set a goal to increase the number of *organs* donated by the deceased to 42,800 by 2013 (McDiarmid 2006, slide 3). Contrast this figure to the 70,401 people today who need a *kidney* donation to live.

<http://www.unos.org/data/default.asp?displayType=usData>.

beneficial. Yet waiting lists in many parts of the country, and for some blood types, now range of five from ten years, often longer than people can survive on dialysis (Id.). One estimate puts the number of deaths in the last decade to people on the waiting list at around 59,000 (Veatch 2006, p. 9). Given today's shortage, some writers have recommended transplantation of damaged kidneys, including giving "an HIV positive organ to an HIV positive recipient" with, of course, full disclosure (Id.).

Perforce, the real action in the future will come from living donors. At this point, the family objections may have social weight, but they have no legal force. The organs are often of better quality, and the transplantation can be planned to minimize any spoilage of decay of organs. The forces of altruism are not absent, but uncertain. There are of course notable instances of altruistic behavior, including the recent case in which Virginia Postrel donated a kidney to Sally Satel,⁶ both well-known and distinguished libertarian writers and public intellectuals. The Postrel/Satel transaction is so notable because it is so infrequent. There are literally millions of individuals who could make these transfers at a modest, but real, risk to their own lives and health. The mortality risk to a kidney donor is about three persons in 10,000. Other adverse consequences occur with a one to two percent frequency. But only a handful of donations occur outside close family connections, chiefly spouses, siblings and parents and children (Gaston et al. 2006, p. 2250). The implicit price for the risk and inconvenience is too high, given NOTA's prohibition on valuable consideration. Yet if altruists treated the benefits to others as if they were benefits to themselves, the queues would quickly vanish. However, the annual supply of both cadaveric and live organs is far below the accumulated backlog.

Clearly, the current policies do not work. In this environment, there are three urgent tasks of both academic and practical interest. The first task is to develop a descriptive economic model of altruism, which is linked to the standard accounts of supply and demand, to help in predicting the effects of the various changes in technology and perceptions that influence supply and demand. The second task is to test this model against some of the common objections against relaxing or removing NOTA's prohibition on sale. The third task is to explain how a general theory of behavior

⁶ For Virginia Postrel's blog, see <http://www.dynamist.com/weblog/index.html>.

describes the success and failure of various efforts to increase the supply of organs in today's world, populated with ingenious schemes to increase the supply of organs given NOTA's firm prohibition on organ sales. Four such programs merit discussion: directed donations, matchingdonors.com, four party transactions, and LifeSharers.

2. ECONOMIC THEORY

Most of the defenders of NOTA argue that the personal psychology of altruism lies outside the ambit of economic theory. The point is surely true, not only for altruistic transactions but for many commercial relationships as well. However in both cases, finding out the determinants of individual decisions is neither here nor there, for what counts is systematic issue of how to model both the supply and demand for organs under various institutional arrangements. Understanding that challenge means answering a rather different question: what are the *fewest* changes that can be applied to the standard self-interested economic models of human behavior to explain altruistic behavior? In this context, altruism is best understood as supplying benefits to others at a net cost to oneself. Once that theory is developed, then it should be possible to carry over some portion of the conventional wisdom to altruistic cases. This model should accomplish two goals. First, it must give some account of altruism in a static environment. Second, it must understand how changes in the costs and benefits of organ transplantation influence both supply and demand, and hence the equilibrium prices and quantities for organs over time. Let us turn to the static question first, and then take up the dynamic one.

2.1 Static Analysis

The most instructive and parsimonious models of altruism will incorporate as much of the standard analysis of supply and demand as is possible. In fact, only one change is necessary to capture the essence of altruism. Draw a new supply curve that intercepts the y-axis in negative territory, and then follow the standard economic analysis to describe behavior both unregulated and price-controlled markets. Figure 1 represents the alternative supply and demand curves. The explanation follows below.

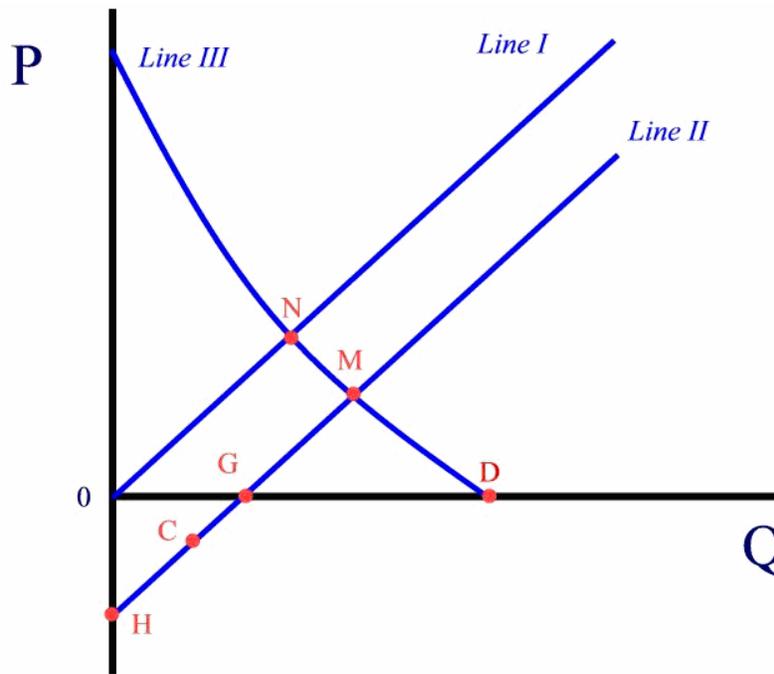


Figure 1. Overlay of actual market and outcome predicted by neoclassical economic model

In this model the demand side requires little comment. It is downward sloping as in *Line III*. I assume that the demand remains the same no matter what ratio of altruists and egoists populate the supply side. *Line III* crosses the x -axis at point *D*, which represents the demand for organs at zero cash price, which is today's situation, where the demand is huge, as expected.

The action takes place on the supply side. There *Line I* sloping upward and to the right, indicates the supply of organs from nonaltruistic persons, as posited by neoclassical theory. It assumes that the total number of organs offered is zero at a zero price, which predicts a shortage of $D_x - 0$. That conclusion rests on the assumption that no individual will make any personal sacrifice—that is, at a net cost to himself—no matter how great the gains to others. Yet as the price to the supplier increases, so too the number of persons willing to transact. Having the supply curve intercept the y -axis at the origin is done for reasons of simplicity. Typically the supply curve crosses the y -axis at some positive point to reflect the positive costs of supplying goods or services provided. But this model just sets those costs at zero. Yet this simplification does not matter, for it does

not alter the basic qualitative analysis, which focuses on the relationship of *Line I* to *Line II*.

All the novelty is found in the lower line, *Line II*, which represents the current world populated with altruistic and egoistic donors. The part of *Line II* that lies below the x -axis represents how some individuals will supply organs even at a net cost to oneself, as is now observed. The vertical distance between the two lines is a measure of the amount of altruism in the system. This basic setup does not presuppose that either altruists or egoists are pure types, and it recognizes that many people, such as those who sell at a positive price, but below cost, act on mixed motives. This model also puts to one side the unresolved philosophical debate over whether altruism is possible, given that apparent altruists might receive some indirect benefit in the form of psychic self-satisfaction or social approval from doing a good deed.

These detours into motivation, however, only lead us away from the central point, which is to explore the implications of a model that accepts that (some) people will supply some positive benefit to others at negative cost to themselves. As such, this account of the social landscape rejects the assumption of relentless self-interest that drives the traditional economic model. But this model works parsimoniously because it continues to treat supply curves as positively sloped. At this point the analytical framework that governs in markets devoid of altruism holds because the model describes how supply increases as prices become less negative, even if no compensation is paid. In this case, without loss of generality, that intuition is modeled in linear fashion. Accordingly, point H, at which *Line II* touches the y -axis, marks the point at which the costs are so high that even altruists decline to donate organs. If this model is correct, it also follows that individuals who start on *Line II* in negative territory (i.e., the altruists) remain on that line once positive compensation is offered. There is no sharp behavioral discontinuity where positive compensation is offered; thus, this model rejects any notion that altruists suddenly become egoists whose supply behavior is governed by *Line I* once exchange takes place above the x -axis. It also rejects any notion that altruists are crowded out as price increases—a controversial assertion that I address in Section 3.

Under this model, altruists and egoists share yet another feature. Any increase in payment that is needed to attract the marginal organ donor—who is not the donor of any

organ of dubious quality—will, in the absence of any system of effective price discrimination, be paid to inframarginal organ donors as well. Sellers in other words make no efforts at price discrimination. It is, however, unclear whether infra-marginal altruists (i.e., those who would donate at negative prices) would continue to supply their organs at below-market prices, or would take the market price. Recent survey evidence suggests that some of them, at least, would not insist on receiving the going rate (Waterman et al. 2006).⁷ If so, then the total payments from transferees needed to reach the equilibrium point M would not be equal to quantity supplied times price. If all altruists were generous, and all egoists demanded the last pound of flesh, then in equilibrium, the total payments would be equal $M_y * (M_x - G_x)$, but not by $M_y * M_x$. *Line II* remains unchanged no matter who takes or turns down compensation. In any event, these details do not matter here, for even if these payments are elicited in 100 percent of the cases, the money that changes hands does not count as a social loss, but only transfer payments.

No matter how the transfer payment question resolves itself, altruism changes the market equilibrium. We get more organ transfers in equilibrium than we do in a world of all egoists, where the quantity of transfers is only N_x (which is less than M_x) and the price paid is N_y (which is greater than M_y). But no matter how altruists behave, the market price should allow end the queues. Nor does the price system substantially alter any other incentives, including those to take care of one's self or to use medicines to avert a kidney transplant. There is little prospect of any moral hazard problem. It is highly unlikely that wealthy individuals will seize on the supply of organs as a reason for engaging in bad behaviors, given the risks they would run, including massive losses in income and personal satisfaction.

Now that these points are established, assume that with the limited benefits that organ donors can receive—reimbursement for transportation and expenses for example—under today's law, the quantity supplied is point C_x , placed on *Line II*, between its y- and x-intercepts. This point is consistent with the observed positive number of donations even when all organ transfers today are at a net loss to the donor. The conceptual question is

⁷ Note that this study necessarily has a powerful sample bias because all the individuals in it had hoped to altruistic donors.

whether to treat this transaction as a sale or a gift matters in connection with NOTA's current prohibition against valuable consideration. The gift characterization seems proper here if only because NOTA's general prohibition against the use of valuable consideration still allows for reimbursement for transportation and expenses, which takes us up only to point C on the basic graph. So long as the transaction holds out no prospect of net get to the organ transferor, it should be regarded as a (smaller) gift, up to point G on the x -axis. This position tracks the Gaston et al. (2006) proposal to increase payments under the current NOTA framework in order to reduce the net cost of giving, as by supplying certain in kind benefits that can be obtained only on the occurrence of specified adverse events: such as a life insurance policy to cover donation-related events, or follow-on health care for transplant-related disabilities. Our model sought to calibrate these benefits from C_x to G_x , thereby alleviating shortages without making any donor better off in violation of NOTA's prohibition.

Our Gaston et al. (2006, p. 2552) study relied on empirical estimates that the shortfall to a typical individual organ donor fell between \$23,525 and \$32,800. I believe that our collective figure is too low. The life insurance premium, for example, is calibrated on a policy of \$1 million, when more realistic estimates of the value of life usually put it around \$6 million per person (Viscusi 1993). The lower figure of insurance is at best a simple reflection of the reduced value of money at death, even taking into account strong bequest motives. It is not a measure of the loss sustained on death. Nor does it take account the disruption that death causes in the life of others, even on payment of the policy. A more accurate calculation therefore should raise that premium about five-fold, from a range of \$1,300 to \$3,300 to the higher range of \$6,500 to \$16,500. Even that figure does not cover the indirect costs imposed on other individuals, to which most potential donors will be highly responsive. The model is also sensitive to the perceived mortality risk on donating a kidney. Thus the calculations would come out somewhat different if the rate of death in organ transferors were either four or two parts in 10,000. In the former case the total would increase by somewhere between \$2,200 and \$5,500; and in the later it would drop by the same amount. But these and any other empirical estimations judgments go only to the precise dollar measurement, not to the soundness of

the basic analytical framework, which seeks to neutralize the uncompensated risks to organ donors.

The question then arises whether the assumption of continuous growth in supply offers an accurate account of human behavior, so that crossing the x-axis has about as much significance as crossing the International Date Line. Is there some huge psychological transformation that requires the supply of altruists to diminish or disappear once a single dollar is offered for organs? The descriptive punch from this model is that no institutional adjustments need be taken to respond to altruism as a strong social force. The explanation here is that altruists and egotists are not distinct types of persons. Speaking generally, some individuals are willing to accept benefits from a transaction that are less than its costs. These people clearly count as altruists, even if they are not all willing to make the same level of sacrifice. Thus some persons will accept \$100 of net loss and others \$1000. It follows therefore that it is improper to exclude from the class of altruists those who provide goods, services, organs at a discount. After all, who makes the greater sacrifice: someone who demands \$100 for a good worth \$1,100 on an item that costs \$500, or someone who just gives outright an item that cost \$10 and is now worth \$50? Also consider that some individuals will demand more than their cost but less than the market clearing price. How should we to classify a person who, with a cost of \$500, sells for \$700 what he could sell for \$1,000? But again the classification issue should not detain us. So long as all persons know how they want to behave, there is no reason to draw any hard-edged distinction between altruists and egoists, or different kinds of altruists. The laws of supply and demand work well enough regardless of the mix between altruists and egotists or the continuity between the two classes of individuals. In the end, the greater the altruism, the lower the equilibrium price and the larger the quantity.

2.2. Dynamic Considerations.

Under this model, it is instructive to ask what factors could generate changes in the level of organ transplantation. This issue matters even with NOTA's prohibition on valuable consideration because changes in technology could easily affect the key elements of the model, namely, the point at which *Line II* intercepts the y-axis, and the

slope of the line. Briefly put, the lower the point of intercept, i.e. the move from H to H', and the flatter the supply curve, the smaller the shortages, for the combined impact of these two changes will unambiguously put G_x closer to D_x , as in Line II' in Figure 2, which I will soon address. In this regard, we can rule out the alternative assumptions that H will become less negative and that the supply curve will become steeper. Given the continuous technical progress in medicine, the supply curve should become consistently flatter, as with *Line II'*. For these purposes, moreover, the exact nature of technical improvements is unimportant. Better stitches, scalpels, and immunosuppressant drugs all have their place, and there is little doubt that the gains which take place in one area have synergistic impact with those that take place in others. Given this situation, it is important to see their effects on both the demand and the supply side.

The judgments are relatively easy to make on the demand side. Basically the improved techniques yield gains in two dimensions. The first is that those people who are already in the hunt for a new organ should remain there with increased vigor, now that they know that the net benefit of the procedure has increased: kidneys degrade less before transplantation; rejection drugs are more effective; surgical wounds are smaller, and so on. The second is that, with new techniques that have greater promise and smaller risks, more potential recipients should enter the market. Quite simply, better techniques increase the number of sensible candidates for transplantation. Moreover, as dialysis improves, people can remain eligible for transplants for longer periods of time further increasing the upward pressure, except on the very unlikely prospect that dialysis itself becomes a quick, riskless and painless procedure. Finally, in the long run, reliable xenotransplantation (from animals) could eliminate all demand for human organs. On net, therefore improved technology should increase aggregate demand for organ transplantation, moving the entire demand curve upward and to the right, as in *Line III'*, increasing the level of shortages, all else equal.

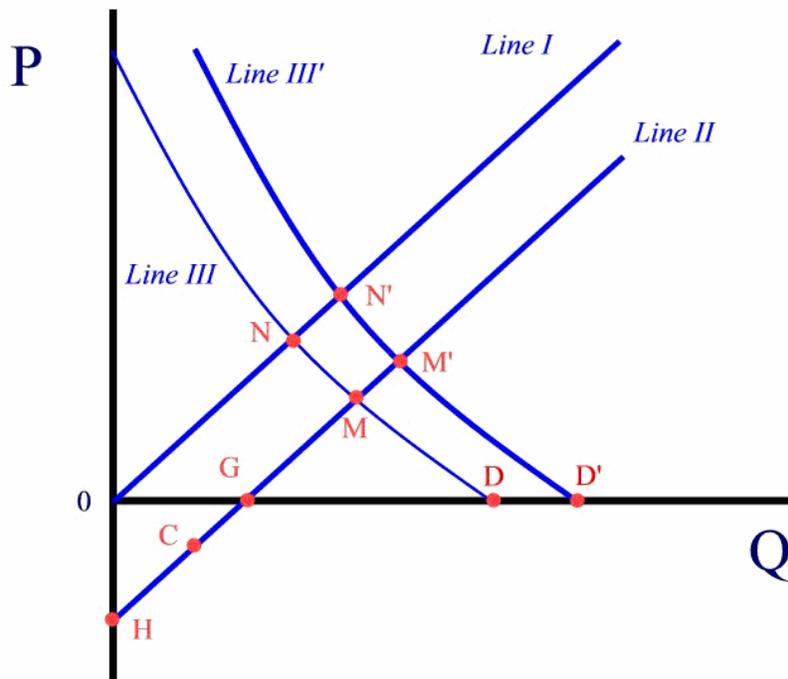


Figure 2. Graph comparing supply and demand curves with increased demand and improved technology

2.2.1. Supply Side Effects: Change in Y-Intercept. Turning to the supply side any sensible altruist should respond to two elements. The first is the knowledge that better transplantation is likely to yield greater benefits to other individuals. Intuitively, this element should induce greater altruism. If a donated kidney had an expected benefit of one year's benefit, fewer people will undergo the surgery than if the transplant had an expected ten-year benefit. With or without discounting, the increase from 1 to 10 expected-quality-life years should surely induce some potential altruists to donate.

In analyzing with the improved returns from transplant, however, it would be mistaken to treat all altruists as selfless in the sense that they regarded one unit of benefit to others as equal to one unit of benefit to themselves. In this connection, the standard biological models of inclusive fitness are instructive. That model assumes, for example, in parent/child relationships that the parent will incur one unit of personal cost to produce two or more units of benefit for the children (for the original account, see Hamilton (1964)). There is in effect a simple reciprocal relationship which holds that one half the genes in common implies the two-to-one ratio at the genetic level. That ratio of

substitution surely is the most favorable that could be expected in human interactions, so that we should expect larger elements in other contexts. Heuristically, a sensible first approximation might postulate that a 10-fold increase in expected benefits over some defined range to someone else induces the average altruist to bear one additional unit of cost. The number is not quite arbitrary, but treats the affinity as some one less than the one-to-eight ratio for second cousins. In any event, the analytical point remains unchanged regardless of the numerical value assigned to this critical ratio.

To see how this model works, note that no one will donate a kidney that produces no gain to the recipient. The rational altruist will behave just like the egoist and wisely do nothing. But once the benefits from kidney transplantation become positive, then a few (extreme) altruists will enter the market. For our purposes, we can assume that their lower bound was H , which is another way of saying that under present conditions they thought the cost H equaled one-tenth of the benefit to the recipient ($B/10$). In the present situation, we need only assume that the same ratio that led to the initial fixing of H will account for its further downward movement, so that from H the altruist will also be willing to bear costs $C + B/K$, where B represents the additional benefit to the recipient and K represents the deflator used to equate the benefits of another to those to one's self, which I postulated at 10. Of course, these changes in external benefits cannot increase the donations from any given donor, which remain fixed at one kidney. But the perceived changed in benefits should induce more altruists to enter the market, thereby increasing the overall supply. Over time, H will move slowly downward with additional improvements in technology, such that every K units of donee improvement will yield a willingness of donors to accept one extra unit of personal loss. Without further changes, the supply line will cross the x-axis further to the right, creating a new equilibrium with a larger supply and lower prices.

A second way to increase the level of altruism is to reduce K , by creating a stronger affinity between the donor and donee, which should in turn push the supply line deeper into negative territory. Knowing a potential donee could increase empathy, and thus the level of donations. Note this change in ratio requires no improvements in technology. Establishing those closer bonds is the objective of many matching programs now in effect (described in Section 4). Favorable shifts of either K or B should improve

the rate of donation under all legal regimes, including the current law and the Gaston proposal.

2.2.2. Supply Side Effects: Change in Slope. The above analysis has thus far only looked at the determinants that shift the y-intercept. Technical and social changes can further change the analysis in a second way, by flattening the supply curve. As in ordinary markets, technical improvements could reduce the marginal cost of additional units, which imply the flatter supply curve, which leads to greater participation at any given price, positive or negative. Any increase in the number of transplant centers, or any reduction in the costs of transplantation could have that effect. The operation could be made cheaper; the time for recovery could be reduced; the long-term complications could be decreased; and more information about the procedure (which is safer than commonly assumed) could reduce the level of uncertainty.

Empirically, the two sorts of changes work in the same direction, for whether we move the y-intercept down or reduce its slope, the supply increases. As, before, the social improvements take place under all legal regimes. In principle, the combination of these two effects might even create a supply curve that crosses the x-axis to the right of the quantity demanded at a zero price, at which time the shortages disappear, so that altruism solves the organ shortage under the Gaston et al. (2006) approach. Or, of course, the shifts could fall short of that objective leaving a modest shortfall, which is the situation depicted in the graph below where all the changes in demand supply generate a new equilibrium at point E', which features lower prices and larger quantities than the original equilibrium at point M. See Figure 3 for a graph with the changes in the supply and demand curves in a dynamic model.

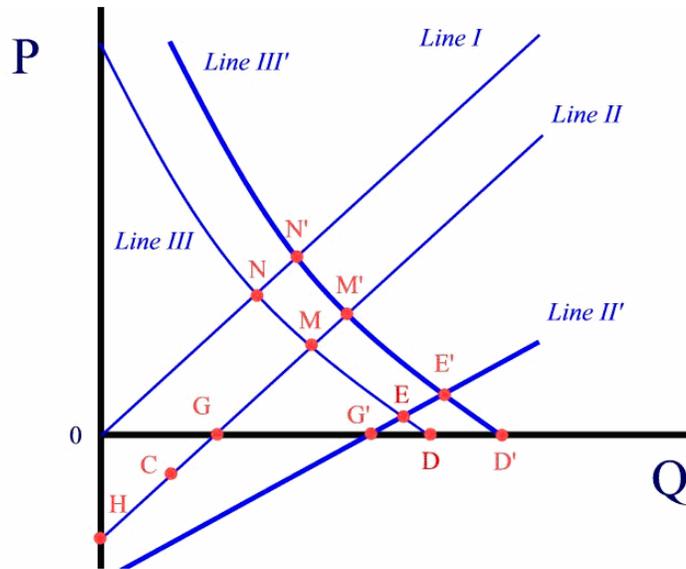


Figure 3. Supply and demand curve in a full market with improved technology.

3. OBJECTIONS TO THIS MODEL

The vast literature in support of the current ban on organ sales, however, does not accept any version of neoclassical analysis. Nor does it treat altruism and egotism in the roughly continuous fashion outlined above. Rather, the hard-line critics raise two different types of objections. The first line of attack disputes the core behavioral assumption of the neoclassical model, which postulates monotonic upward movement along the supply curve. The second line of take holds that many well-established limitations on contractual freedom—duress, incompetence, fraud, mistake, and exploitation—are so potent in this context as to call for shutting down the market altogether. Rejecting these arguments does not indicate exactly which of the legion of proposals should be put into its place. The possibilities in this regard cover everything from ordinary commercial markets, to monopoly markets in which only governments could buy organs, to markets that impose strong restrictions on the entry and payment of private actors, such as the Gaston et al. (2006) proposal. My own preference is to move to unregulated markets, but I would settle for much less in practice. The arguments here, however, are not meant to decide among these various positions, but to respond to the hard-line defenders of the status quo. With that caveat, I turn first to the behavioral, and

then to the traditional objections, to the relaxation of the NOTA ban on valuable consideration.

3.1. Behavioral Objections.

3.1.1. What is crowding out? The first objection insists that the usual rational actor assumptions that work tolerably well in traditional for-profit markets do not capture the complex human motivation that operate in altruistic markets. In many cases, that uneasiness is captured by the term “crowding out,” which expresses the belief that any use of valuable consideration will weaken the human bonds of altruism so that positive prices will *reduce* the supply of organs. *Line II* of Figure 3 ignores any crowding out effect by assuming that quantity supplied moves upward with price increases. To support their claim of crowding out, opponents of the voluntary market often look to the work Titmuss ([1971] 1997) on blood donations, which found that many altruists just withdrew once payment was offered. There are multiple ways in which this point could be expressed. One possibility is that the supply of altruist organs disappears once any cash payment is introduced. A second is that crowding out is responsive to the size of the payment, such that the more that is paid, the more altruists drop out, until the market is composed entirely of egoists. Alternatively, it could be assumed that high payments keep altruists in the market by offering independent confirmation of the high values of their gifts. All of these assumptions mean that increased prices lead, at least over one segment of the population, to either as vertical or backward-bending supply curve for altruists. Rather than graph all possibilities, the panels below in Figures 4 and 5 assume that there will be partial crowding out of altruists by positive payment, which is independent on the amount of money paid. The first panel depicts the altruist supply curve. The second depicts the combined curve for altruists and egoists, with a discontinuity at the breakeven point to reflect the departure of some altruists from the market. Accordingly, the combined supply curve looks like the altruist curve until the price equals zero, at which point it all ratchets back by $G_x - P_x$, and thereafter continues upward with the same slope as *Lines I* and *II*, but falls somewhere between them.

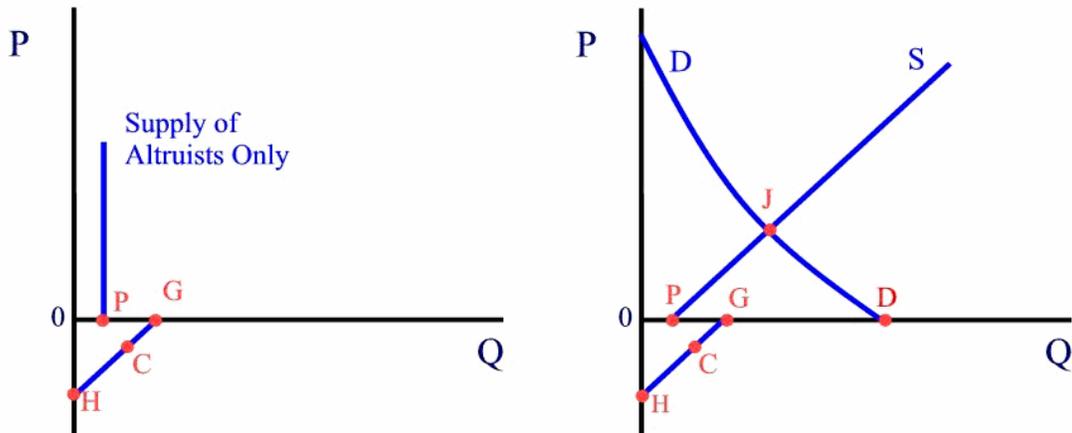


Figure 4. (Panel I.) Altruists' supply curve with partial crowding out (left graph) and market with partial crowding out of altruists at breakeven point (right graph).

Alternatively, we could assume that the altruist supply curve is backward bending once valuable consideration is introduced. On this model, depicted in Figure 5, total supply turns backward between points G and K. At that point, all altruists are out of the market, so that the combined curve is simply the egoist curve that we had before. The equilibrium at point N yields a higher rate of transplants than the altruist market, as the increased supply effects from higher consideration swamp the altruistic losses.

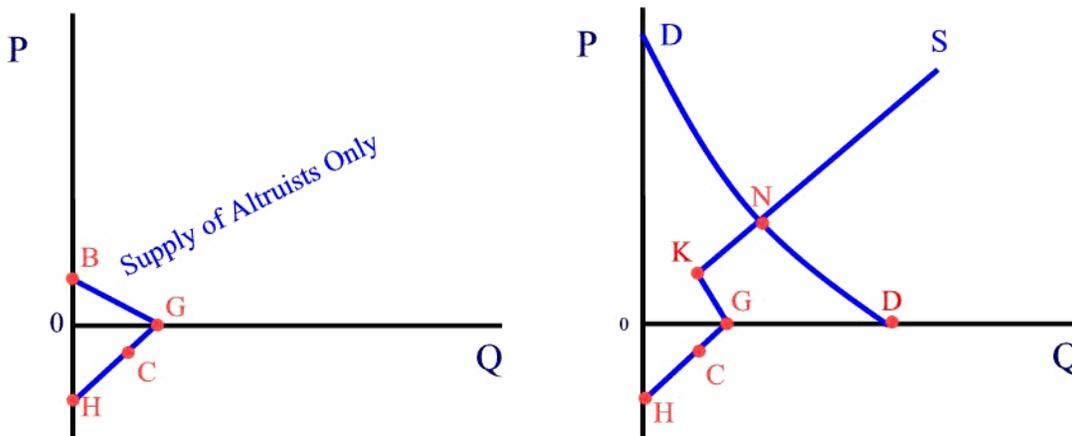


Figure 5. (Panel II.) Altruists' supply curve with complete, continuous crowding out (left graph) and market with full, continuous crowding out of altruists (right graph).

The crowding out thesis typically does not clearly distinguish among these various cases. But it does assert that the total supply will be lower with payment than without, which will not be true once the cash or other benefits supplied become large enough. In any event, any assumption of crowding out is testable in principle. We could decide to relax the prohibition against valuable consideration and observe the various responses. What happens to uncompensated donations? How many new entrants join the market and take the compensation offered? If it turns out that the aggregate supply is lower than before, it will be important to check whether the price levels exceeded the dollar figure that would drive all altruists out of the market, or to demonstrate the organ market is so oddly configured that even egoists flee once cash or other valuable consideration is offered. If a real payment schedule experiment turned out to curtail total contributions, we should stop the program and treat the present and growing shortages as an immutable fact of life that is only made worse by injecting cash into the equation. But the chance that a strong supply response among egoists would swamp these effects is substantial as well. The current shortages are easily predicted by standard theory, with or without altruism, that we should be wary of making extreme assumptions in untested waters. And given the potential number of lives to be saved, the test is surely worth the gamble.

3.1.2. *The Empirical Studies.* To buttress the above analysis, let us assume that Titmuss was correct in observing the level of voluntary blood donations went down when payment was introduced. What explains this counterintuitive response? One possible explanation is that a low stated price signals to altruists that their gift is of little social value. I find it difficult to credit this signaling explanation because so many other sources of public information are available. Surely, it is not beyond the power of blood banks and hospitals to talk up the gift of life. Who will think that a life is worth only \$10 or \$100 because that is the administrative price set for blood? Even if that were the case, then raise the price to \$1000 per unit, and watch the altruists stream back in for no money at all. The signaling explanation predicts a boost in altruism if high prices were paid, which is not what most of its adherents actually believe.

Even if the blood studies proved robust, the transfer to the donation of kidneys is doubtful. The cost of making blood donations is several orders of magnitude smaller than

that of making kidney donations. Altruists who are in for a \$100 transfusion might not be in for a \$50,000 organ transplantation, given that we the amount of altruism to decrease as the perceived level of sacrifice increases. Whatever signaling effects hold for blood need to carry over to kidneys, where the number of altruists is far smaller. And for livers it will be essentially zero, given that the risks of liver transplants are huge relative to those for kidneys. It is therefore very iffy to draw inferences about behavior from one market to another, even within the broad class of organ donors. Altruists, like everyone else, will respond to the incentives created by costs, benefits, and the ratio between them, and they should do so, more or less, in line with the model outlined above. On this regard, it is worth noting that there is in Iran a regulated organ market which essentially clears, without evident complications. Again the transference to the US setting is not clear, but the evidence clearly casts at least some doubt on the power of the crowding out effect (see Daar 2006).

The evidence of close organ transplants does not support the view that the crowding out effect will be robust. To bolster their claim, the defenders of the NOTA ban often rely on economic studies that point out behavioral anomalies in other markets. Accepting altruism as a motivating force necessarily buys, but cautiously, buys into this approach. But great care is required before making grand leaps that ignore powerful situational differences. Thus Rothman and Rothman (2006), for example, rely on a well-known study of an Israeli day care center which initially did not charge parents who came late to pick up their children (see Gneezy and Rustichini 2000 for the original account). The number of late pick-ups was modest. Shortly thereafter, the center introduced a small fee (\$2.50) for a late pickup, only to observe that the number of children who were kept late increased, as parents perceived the fine as a price that allowed them to consume as much of the service as they chose for the stated figure. Yet once the fee was removed, the high level of late pickups continued because it proved impossible to revert back to the pre-fee norm. The introduction of, as opposed to an increase in, the price altered the underlying relationship between the parties so as to produce counterintuitive effects.

Experiments of this sort offer at best uneasy guidance for the organ transplantation problem. One obvious difference is that the day-care study involved continuous and multiple interactions over relatively small accommodations that were

embedded in a larger relationship that straddles the line between business and education. The standard legal literature from Roman times forward has always used a different metric to deal with gratuitous transactions, as is evidenced by their treatment of the gratuitous bailments and agency contracts (Nicholas 1962, pp. 187-89). It was well understood that any who received a favor was always at risk of termination of the service in question, at least if notice was given before the promisee had changed his position. Given that general risk, the parents could have chosen not to “abuse the privilege” for fear that they could be summoned to school at a most inconvenient time to pick up their children: the no payment is a clear sign that the service is done at the risk of the recipient. The low abuse rate therefore reflected the socially internalized risk of lost services. The price/fine was taken as a signal that the day-care center had taken on itself the obligation to care for children whose parents were late. Once price was introduced, the higher use gave a clear social signal that the school was offering a superior product for which it is reasonable to expect a higher demand. In essence the higher utilization indicates that parents valued the added security of the transaction by more than \$2.50. The sociology should track the differences in expectations, not to refute the proposition that a higher price elicits a larger supply of an *identical* service. The continued high level use after the fee was removed is more difficult perhaps to understand, but in principle, there is no reason to think that any complex set of social interactions is perfectly reversible. Now that the parents know that the school has geared up for the increased demand, they could easily think that their impositions caused less inconvenience previously. Also, another weakness of the experiment is that it never asked how parents would respond if the fees were raised to a market price, that is, one that allowed the school to cover the cost of the additional service. Hence this entire after-school market could have been out of equilibrium at all three stages: all parties might have been left better off with market rates for the after-school activities. Even taken at face value, the study does nothing to prove that the optimal equilibrium was reached at zero prices. The social dynamics in this school market therefore give us little or no information about what is likely to happen when cash or valuable consideration is introduced into a deregulated organ transplant market, where the stakes are a thousand fold higher. Indeed, stressing the imperfections

of the neoclassical theory does not falsify its central prediction: price controls lead to queuing and systematic shortages, as in the organ market.

3.2. Traditional Objections.

The defenders of NOTA also raise more traditional economic objections against the use of voluntary exchange. In principle, they accept the usual economic tenet that voluntary exchanges increase the subjective welfare of both parties. Yet then they argue that these markets, even with limited altruism, are flawed by ignorance, opportunism, coercion and worse. No question that the various accounts of misbehavior in third world countries and in gray markets are lamentably consistent with standard economic theory, which reminds us that some individuals are prepared to cheat, without moral remorse, if they think that they can get away with it. But at this point there is a serious disconnect. Objections of this sort apply to credit, medical and insurance markets. Yet no one thinks that the right response is to shut them down. Instead the first line of response should be rules that license practitioners, require disclosure, have public inspections, impose minimum wages or maximum prices, in an effort to knock out the bad transactions while allowing these businesses to continue in operation. But with organs the set of undocumented defects is thought to preclude any narrowly-tailored remedy and to require shutting down the entire market without trying any more targeted response. Thus if the key objection was the exploitation of the poor and the vulnerable, then we should ban persons with incomes under \$25,000 per year or without a college education from the donor pool. If the objection were that rich people would get all the organs, then at least allow for the government to buy at some stipulated price, and then distribute the organs under the traditional criteria (see Cohen 1989; Hansmann 1989). In the end, it is hard to resist the impression that moral objections drive the inquiry, and whatever unhappiness one has, for example, with Leon Kass's (1992) heroic efforts to ground the prohibition in moral language, at least it does not suffer from want of candor.

Nonetheless, it is instructive to take these claims of contractual breakdown at face value. At the outset, however, recall that any willingness to cheat or exploit differs across individuals like any other variable. Examining the risks of fraud and sharp practice in novel markets, it is always a mistake to focus on persons with generous, or even normal,

moral sensibilities. Powerful selection effects will determine how people with different temperaments will sort themselves occupationally. Malicious people often take advantage of upright individuals.

This selection effect should influence how to think about the control of fraud and sharp practice in any organ market. Thus it is a mistake to assume the current players in the illegal organ will remain after legalization. As their comparative advantage diminishes their numbers should dwindle. The first approach to organ markets with cash or other valuable consideration should not be to add tough new sanctions to curb the rascals. The risk is that tough sanctions will deter honest people from entering the legal market. The key argument for liberalization therefore stresses how the legalization encourages reputable traders, including middlemen and agents, to enter into the market, and to brand themselves by advertisement and repeat play, so that potential organ transferors and transferees can have confidence in someone who knows the ropes. On this view, the least desirable reforms are to block the use of brokers and other intermediaries from appearing in the marketplace (see Matas 2007 for that proposal). Once again the change in circumstances makes it perilous to draw inferences about the behavior in legal markets from the behavior in illegal ones. One might as well say that all real estate markets are filled with intrigue because of the peculiar landlords who operate in rent-controlled markets. Yet if we remove the price control, the queues vanish and ordinary individuals who have no stomach for the intrigue that always takes place when price controls induce systematic shortages, come back into the market.

The traditional objectors to organ sales often make distributional arguments against the practice, claiming that it will disadvantage the worst off in society relative to the remainder. Here the implicit assumption is that all the donors will in fact be poor and the recipients, who bid up the price, will be rich. The argument is subject to a number of responses. The first of these is that even if the argument were true, it would not justify the total ban on organ transplantations. Rather, it would require that all donors have a minimum level of income or education before they were allowed to participate in the market. But even these forms of protectionism seem over the top. Given the general diminishing marginal utility of wealth, on balance we would expect that the largest gain from increased income would go to those who are the poorest off financially, not those

who are well endowed. If so, then this form of prohibition knocks out the parties who enjoy the greatest potential for gain.

The fear of exploitation is misplaced from another perspective. Organ recipients are picky about where the organs come from. Persons with histories of drug and alcohol abuse carry with them the risk of transmitting deadly infectious diseases, which no one wants to accept. The demand for organs therefore will not be strong for organs supplied by those who are down and out. In addition, there is some concern about whether potential cash donees are aware of the risks they face and the possible psychological harms. But those risks face altruistic donors as well, and various counseling and testing devices are used to see if a donor is fit. The same practices can be carried over to paid transferors as well, subject to the same protocols. All in all, if the proposition of mutual gain holds, then there is little if anything to fear on these supposed distributional grounds. And even if there is, then the introduction of some government subsidy, in lieu of covering the cost of dialysis, should put those concerns to rest, because the worst-off under the new system are far better off than they are under the old.

There is also an objection to the use of markets from the demand side. Whether we think that the equilibrium is at point N or M in Figure 1, some persons who are in need do not receive the organs that they want. That outcome is of course a feature of all systems in that all persons who value a good at more than zero do not receive it, leaving the “shortage,” as it were, of either $(D_x - N_x)$ or $(D_x - M_x)$, depending on the role accorded to altruism. But that supposed market defect applies not only to organs but to any good and service that is sold, including other sorts of health care. Nor is it necessarily a bad thing. To be sure, in health care settings the link between wealth and utility is highly imperfect, so it would be foolish to assert that “just the right” people have gotten the organs, just as it would be unwise to assert that “just the right” people purchased toasters.

Lest one buy into this egalitarian critique, however, sorting by bidding or markets is likely to do far better than random. It should never be assumed that rich people will always get the organs because of their greater wealth. They too will not bid a fortune to acquire an organ that will extend their lives only by a single day. A poorer person with better health prospects could easily bid more, relying on savings or loans if he could pay for the organ out of the increased earnings that come from better health. Since everyone

agrees that the market for organs is not wholly commercial, charitable support could provide additional financial to deserving candidates of limited means. Indeed, any political effort to trim back or repeal NOTA should include a large foundation grant with just that function in mind. But in principle, even if the charitable support is inadequate, the results should be no more offensive than in other situations where wealth wins out—and perhaps less. A received organ should not be viewed solely as a consumption expenditure. Persons with higher incomes could on balance make greater use of the organ (and produce more in tax revenues and other social benefits). No one should be rash enough to postulate a perfect correlation between wealth and utility. But everyone should be hard pressed to endorse any moral theory that prefers larger shortages to smaller ones, which is what happens when all cash or other incentives are ruled out of bounds. All egalitarian theories unwisely reject important classes of Pareto improvements, by taking the position that—but only with respect to markets—unless all can receive, none should receive. Yet they strangely cast that requirement aside under other allocation systems, such as the UNOS list, under which all persons in need do not receive either. The best strategy in all cases is not to impose bans on measures that tend to increase supply, but to work to increase supply so that ideally the available price is low enough to make organs widely available.

4. EXPANDING SUPPLY WITHIN THE CURRENT SYSTEM

The third inquiry in this paper asks how people respond to NOTA's current prohibition against voluntary transactions for valuable consideration. The topic helps to shed light on how incentives will mold behavior when and if NOTA's prohibition is lifted. Right now, no one can study the behavior in unregulated organ markets. But if the participants in the current market behave as the model of altruism predicts, then we should have more confidence that rational behaviors will dominate after the repeal or relaxation of NOTA, so that we should worry far less about behavioral anomalies and crowding out, or other unwanted or untoward effects.

The current UNOS system provides a convenient benchmark to assess the effectiveness of the four strategies that people have adopted to get off the UNOS queue. The first two strategies are related. "Directed donations" allow individual donors to select

the donees of their choice. Sometimes, the impulse for the direction comes at the initiative of the donor. But its more controversial modern form involves active *solicitation* of an organ donor by a potential recipient unrelated to and unknown by the organ donor. The website Matchingdonors.com offers a way to lower the cost of that endeavor. The last two devices work differently by exploiting the gaps in the “valuable consideration” requirement, essentially by bartering one organ for the immediate or future promise of a second. There is of course no assurance that any of these strategies will prove successful in the long run. Quite the opposite, in many instances neoclassical theory, suitably modified to take limited altruism into account, predicts the likely failure of many efforts to reduce the current organ shortage.

The UNOS Queue Currently UNOS has rigid rules to determine the place of each individual on the waiting list (for a longer discussion of the UNOS rules, see Epstein 1997, pp. 264-72). Because of its conscious rejection of all market solutions, UNOS relies on a range of objective tests, related to such matters as compatibility and length of time of the transplant list, that have this single virtue: they remove (in most cases at least) the subjective element from the system, and thus tend to counteract the perception that the decisions of public bodies are skewed toward the rich, famous, and influential. These protocols also eliminate the rancorous and inconclusive collective debates about which individuals are more deserving of a valuable organ. Thus prior to the scoring system, committees, the so-called “God Squads,” had to decide which application to accept. Should it prefer the mother of three small children with no workplace experience to the brilliant scientist with no family to support? Choices of this sort, replicated hundreds of times, put conscientious people into impossible conflicts, which in the end led to the abandonment of the enterprise.

The resort to these impersonal criteria, however, introduces real drawbacks into the queuing process that detractors of markets often overlook. For starters, UNOS ignores all soft-features that do matter, albeit in different ways, to different people. The current UNOS rules do not give any weight to the relative value of the organ to persons on the list, whether measured in quality-of-life years, or net social contribution, as determined by income or some other more complex social indication. If the organs allocated by years on the queue, then our neutral principles of organ “sharing” do less than they ought to

reduce the total level of human suffering. The longer people languish on the UNOS list, the worse their condition becomes, so that when the organ arrives, it extends life for fewer quality-years than if it had been donated to some person in better health. Nonetheless, UNOS has no system of triage and keeps people on the waiting list until they literally are unable to tolerate the surgery that could save their lives.

The current practice is coming under increased scrutiny within UNOS, which is now considering a major initiative to alter its formal criteria for the waiting list to give more weight to expected benefits from organ use and less weight to years on the waiting list (see Meckler 2007b). But no precise proposal has yet to be formulated, let alone approved by the Department of Health and Human Services. At best, UNOS will face enormous difficulties in transitioning bureaucratically from the established protocol to any new system. Quite simply, years on a waiting list creates a kind of prescriptive right, which is strengthened as long-time queue members gain influence in transplantation groups. The predicted resistance from high-ranked incumbents is likely to block any UNOS reform that will wring the maximum number of useful lives out of each kidney. A market system, of course, would have the opposite tendency, for on balance the highest bidders would tend to be those for whom the organs are most valuable (for further development of this criticism, see Epstein 1997, p. 268). Yet as bidding is foreclosed, imaginative parties have looked to other techniques to expand the supply of kidneys, to which we now turn.

4.1 Directed Donations.

The first effort to expand the supply of organs involves the use of directed donations, both live and cadaveric, now under review at UNOS. The law today allows anyone to make organ donations to a designated person of his or her own choosing regardless of donee's place on the overall UNOS queue. The intuitions behind this practice are clear enough. First, the ability to select a donee increases the likelihood of affinity, reducing the figure K in our equation, which in turn induces more donations. Sometimes a closer personal connection will tip the balance in favor of donation. Second, ability to select a donee allows for a donor to select persons in better health who will profit more from the donation, again increasing donations. It is just this dynamic of close

affinity and high return that explains why Postrel donated a kidney to Satel. Quite simply, ordinary people, acting unilaterally, are likely to favor recipients who have just made it to the queue, and not those who have long languished on ossified UNOS lists. The old squabbles in the God Squads are removed because every donor acts as a committee of one who need not justify his or her preference to others. One donor can opt for the scientist and another for the mother. The social gains to the transfers are not confined to the benefit to the recipients but also include the additional benefits to the full range of social groups and organizations of which these transferees are part.

Notwithstanding the real advantages of directed donations, the UNOS monopoly has resisted their expanded use. UNOS defenders attack directed donations as a reprehensible form of queue jumping, which upsets the natural order of things (for example, Zink et al. 2005, p. 6). Their short-sighted and misanthropic view implies that every altruistic donor should give his or her kidney to the first person on the list. Yet this insistence that donors be indifferent to the identity of their donees is counterproductive fantasy that goes against every principle of charitable giving. The only way to nourish altruistic instincts is to praise individual acts of altruism, not to condemn them for being made to the “wrong” person. After all, a completed kidney transfer matters more than a refined discussion of whether a particular transfer is selfish (because of the adulation) or altruistic. Without a directed donation, it is highly likely that the donor will just keep the kidney. With it, the queue for organs will be shortened by one person, which benefits everyone, including those people on the now shorter waiting list who have not been able to secure individual matches: they either move one place closer to the top of the queue or do not receive a kidney that they would not have received anyway. It is a situation in which some gain and no one loses. If enough potential donors followed the Postrel example, the queue could disappear altogether. The moral here seems clear. Directed donations are not some dubious loophole that eager regulators should seek to eliminate (contrast with Delmonico and Grahan 2006, which though confusingly worded seems to point in the direction of increased regulation of direct donations). They are generous acts that all decent people should encourage.

4.2. Solicited Donations.

4.2.1. Generally. Current practice uneasily accepts directed donations within families or between close friends. Its limited success has led to conscious efforts to *solicit* donations from comparative strangers by advertising. These solicited donations have been met with an even more guarded response. Frank L. Delmonico, a former President of UNOS, has voiced an uneasy acceptance of this use of solicitations: “I don't think we can legislate or regulate how people get to know each other. . . . Once that occurs and someone decides they want to save another person, I don't think we ought to stop that as long as they are medically suitable, are not violating the law and are fully informed” (Stein 2005). Note he makes no acknowledgment that the directed donations improve resource allocation.

Others bioethicists are much harsher. Arthur Caplan, a University of Pennsylvania bioethicist, voices outright opposition to them: “It undercuts the ability of the system to get organs to those most in need and who have the best chance to survive. . . . It's not fair because it gives priority to people who can get attention.” (Snowbeck 2004). The first point is misleading, because “in need” refers, perhaps, to “most sick,” which are not those with the best chance to survive. Nor does Caplan explain why getting attention is a bad idea, if, for example, it is a rough proxy of one's determination to fight disease, or of a family's willingness to help out in times of stress. In addition, any solicitation is likely to have positive externalities: greater media coverage can make more people aware of how donating organs saves lives, thereby increasing supply.

Finally, and most emphatically, Zink and her colleagues urge a misguided loyalty to the UNOS guidelines that directed donations only allow privileged individuals to jump the queue without increasing supply. “[T]here is no proof that a family who donates to an organ solicitor donated only because of the solicitation. It is equally likely that someone who makes the decision to donate to a relative stranger would make the decision to donate to any person on the waiting list who is also in extreme medical need.” (Zink et al. 2005, p. 8). Not so, for any donor who wants to increase B and reduce K, as the model predicts.

Unfortunately, this skepticism about solicited donations has two negative effects, one theoretical and one practical. First, this skepticism misses the positive effects that solicitation has on organ supply. Taking Zink et al. literally on the “equally likely

condition” implies that each organ solicited specially would go to someone on the queue. That will not happen. Suppose, assuming her position is correct, that only but 50 percent of potential donors would drop out. To defend Zink’s ethical intuition, we must be confident that it is better to save one person selected under the flawed UNOS criteria than to save two individuals voluntarily chosen. Indeed that two-to-one ratio seems all too favorable to Zink et al., for it seems more likely that no organ donation would be made in the absence of solicitation.

This suspicious mindset to solicitation also influences practical behavior. Far from denouncing these personal campaigns, UNOS and every other government agency should praise them from the hilltops, by running stories on the personal relationships that made donation possible, as with the Postrel and Satel example. Yet, the UNOS website has not one word of their relationship. Indeed UNOS does not thank by name *any* of individuals who gave organs, or who permitted the transfer of their loved ones’ organs on death. No private charitable organization would be so oblivious to the small things that spark private generosity. But, as a government monopolist, UNOS just lacks the personal touch, or is unable collectively to embrace the legitimacy of these altruistic transactions. The momentum to stop directed donations does nothing to help human happiness. It only props up a state-sanctioned monopoly that should be broken up forthwith. UNOS, notwithstanding its nonprofit status, is literally a state monopolist. The federal government has granted it a monopoly over organ procurement under a contract that has been renewed four times over the past sixteen years. (UNOS 2007). The nonprofit/profit distinction counts for little, because the impulse to political aggrandizement is present in individuals who run nonprofit firms. High ethical rhetoric has been used too often to preserve this and other state monopolies. The UNOS monopoly should be broken and the government should let anyone participate in the allocation business, even if NOTA is retained.

This hostility about directed donations also influences activities on the ground to *reduce* the supply of organs. Thus many transplant centers refuse to perform a transplant between two parties who do not have some long affective history with each other. They are surely within their rights as autonomous institutions, but that makes their behavior all the more appalling. In addition, counseling programs consistently resort to scare tactics to

frighten individual donors from making gifts. Should any councilor ask such questions as, “Do you know that if you give an organ to a stranger, it will no longer be available to someone in your family?” What sense is there to reduce the chance of an immediate donation in order to preserve the miniscule chance of using that organ for one’s own kin? Even under NOTA, it is far better to encourage the immediate donation and to offer the donor, or more precisely his or her child, a place at the top of any future queue. UNOS does that with other donors, and should be able to do so here as well.

4.2.2. *Matchingdonors.com.* A particular approach to expand the supply of available organs through solicitation comes from Matchingdonors.com (2007). The organization, of course, does not use cash payments; nor can it do anything reduce the risk of surgery. But it does two things to expand the supply of organs. First, it lowers the y-intercept in the supply and demand curve by increasing the subjective benefit from donation, by allowing people to look for other people with whom they feel some natural affinity, such that they are invested in their success. Second, it flattens the overall supply curve by reducing the search costs of donation. Matchingdonors.com achieves these ends by using new web-based technology to facilitate solicitation by or on behalf of a potential organ recipient to persons with whom the donor has had no close relationship. By its own formulation, “MatchingDonors.com is a venue where patients and potential donors can meet and communicate, and hopefully expedite a donor agreeing to give a patient a much needed organ.” (Id.) By narrowing down the potential matches for any prospective donor, and allowing easy interchange, it increases the odds of a directed donation, with a positive impact on supply. People find it easier to give to someone whom they like rather than to someone they do not know.

Solicited donations raise the increased possibility that the ostensible donor may receive some covert payment that violates the UNOS prohibition against valuable consideration. Matchingdonors.com is aware of this problem and takes what steps it can to block any violation of the law. Even so, UNOS has in fact criticized Matchingdonors.com because it requires a fee for participation, which is said to “exploit vulnerable populations.” (Snowbeck 2004). Why this criticism should be true in this context but none other is difficult to fathom. Surely it cannot be because of the fees to list, which are often waived for persons with need. UNOS also protests that the program

favors those with the best “media skills,” which again ignores the increase in supply that these advertisements bring about. No one has precise data as to the increased number of organs, but it is certainly not zero. An organizer of a similar web-based donor-matching program said of the program’s success, “[w]e’re drawing a lot of people to donate who wouldn’t otherwise. We’re saving lives.” (Stein 2005). The right response for UNOS is not to fight the trend but to join it, by using its own data bases to create a similar service.

4.3. Donor-Recipient Pairs.

By far the most important third way to increase the supply of organs is through a system of barter involving donor-recipient pairs. In most economic markets, barter has a limited role to play because it requires a precise matching of the needs of one person to those of another, especially if no cash can be thrown in to balance the transaction. Your horse must be worth about the same as my cow, and we each have to have separate needs in order to gain from the exchange. In unregulated situations, we tend to see barter only with respect to low price goods of roughly equal value for which it has to set prices. In regulated situations, barter may be used to reduce the level of taxes or the risk of illegality. In these settings, the parties are willing to suffer some market inefficiency in order to escape direct regulation or avoid some prior contractual obligation to a third party.

The rise of barter in organ transplantation is a direct consequence of NOTA’s prohibition on valuable consideration. Thus a pilot program proposed (but not executed) at the University of Chicago contemplated this sort of transaction with donor-recipient pairs. (Ross et al. 1997). The proposal suggests how it might be possible to incorporate gains from trade through a system of barter: if donor A is not compatible with his or her family member, recipient A who is in need of an organ, and donor B is not compatible with his or her family member, recipient B who is also in need, then the kidney center would broker an exchange such that, if compatible, donor A gave to recipient B, and donor B gave to recipient A. The double pairings in effect are done without the use of a price mechanism. The simple mechanism has value because the barter sets a unique price that eliminates haggling between the parties, and does so in a setting where the gains to both donor-recipient pairs are large enough to propel the situation forward. This last point

is quite telling when one recalls the value of the second kidney to a donor relative to the first kidney to the recipient. The loss of one kidney (including the costs of doing the transplant) can be estimated in the neighborhood of \$50,000. The gains from an additional 10 or 20 years of life—conditions will obviously vary—will dwarf that number by at least one order of magnitude and probably closer to a million dollars (see Epstein, forthcoming, for some discussions on the estimates; see Murphy and Topel 2006 for some estimations on the high per year value ordinary people attach to life). Think of it this way. If one family member or spouse can lower that K ratio from 10 to 1 to about 2 or 3 to 1, which seems highly likely, then if the transaction costs are low, the deal will take place. Note that even if the organs are not of equal quality, the deal will typically go forward because of the huge potential surplus. Faced with an all-or-nothing choice, A will surrender an organ at the cost of \$50,000 to obtain an organ worth \$500,000 for a spouse, even if receives a better organ worth \$1 million at the same \$50,000 cost. The execution of the deal will have to overcome the weakness of the legal rights structure. Owing to the want of legally ordered specific performance of organ donation arrangements, the two transfers have to take place simultaneously, as there is no other means of assurance that the second donation will take place once the first is completed (See, for example, *Lumley v. Wagner*, 42 Eng. Rep 687 (Ch. 1852), in which the Lord Chancellor refused to issue a decree of specific performance to make Ms. Wagner sing but did order an injunction that prevented her from singing for anyone else; note that an injunction is of no help here). No one has confidence that some inborn sense of justice would impel the second donor to go through with the transaction if his or her spouse had already received a much-needed kidney.

The effectiveness of this pairing-program depends critically of the asymmetrical position of persons with blood types O, A, B, and AB. O-type individuals are universal donors, but they can only receive blood and organs only from other O-type donors. Blood type-A individuals can receive O or A blood, but not B or AB; similarly, persons of blood type B can receive O or B blood, but not A or AB. AB donees can receive blood from anyone. In this model, there are limited opportunities for barter given that most individuals are type O, so that in principle no cross-group pairing is needed for a type O

donor to make a donation to a family member. But barter could expand the potential donations in several situations that have somewhat different consequences.

First, assume that the first donor recipient pair is type A/type B, and that the second is type B/type A. This is, relatively speaking, a low probability, but still quite common, pairing because, relative to O, there are fewer A and B types in the population. But if it does occur, even with two useable organs of unequal quality, both pairs gain because the swap increases the supply of usable kidneys in this subpopulation from zero to two. Lainie Ross, who is both a philosopher and a physician instructively calls these “balanced transactions.” Lawyers capture the same notion by indicating that the program has no disparate impact. Since all the gains are fixed, there is no need for any side cash payment to propel the transaction forward.

Second, assume that the first donor-recipient pair is type O/type A, while the second pair has a type-A donor and a type-O recipient. The first pair does not need the second to complete the transfer. But both transfers can take place if the first donor supplies to the second recipient and the second donor supplies to the first recipient. In this case, the increase in available organs is one because the ineligible A donor/O recipient pair is replaced by an eligible A donor/A recipient pair. Ross calls these transactions “imbalanced” because all the gains are enjoyed by the A donor/O recipient couple. Elsewhere, she has argued that the risks of coercion should block this transaction, even though that type of donation is more likely to occur than the first scenario (Ross and Woodle 2000, p. 1542).

Without question, this unbalanced program does suffer from an intuitive unfairness, which can I believe be given a precise account, namely that in voluntary exchanges we would like to see proportionate gains to the parties, much as we like proportionate impact in cases in which the state exerts its power of eminent domain (see *Armstrong v. United States*, 364 U.S. 40, 49 (1960)). In addition, these unbalanced transactions are unlikely to take place precisely because there is no gain to the first pair of transactions, which faces higher transaction costs with no benefit (except perhaps when it receives a better organ for an inferior one). Yet rather than abandon the potential gain in the name of coercion, a cash payment would allow the parties to equalize the gain and to expand the supply of organs. At this point, the intersection between economics and law

takes a surprise turn. The use of these barter transactions between unrelated families looks as though it violates NOTA's prohibition of "valuable consideration." In fact, that point has been disputed throughout NOTA's history. At present, the willingness of UNOS to bless these barter transactions to pass muster when there is no cash transfer stems from the fact that there is no bargaining space over price in either cash or kind in a straight organ-for-organ transaction. UNOS glosses over the fact that each organ should, under ordinary contract principles, without doubt, be regarded as valuable consideration for the receipt of the other (see American Law Institute (1932), § 75, where the definition of valuable consideration is "very liberally defined"; see also Corbin 1937, p. 453). But the imbalanced transactions, which promise smaller gain at higher cost, do require a cash supplement in order to make it mutually attractive, and thus open up the question: just how much should be allowed? Under present, these transactions are illegal once cash or any other form of consideration is introduced.

There is, however, some real movement on this front, as Congress has (as of this writing) before it a bill, The Charlie Norwood Kidney Donation Certification Act, that defines away the problem by exempting straight organ swaps from the prohibition against the use of valuable consideration (H.R. 710, 110 Cong. 1st Sess, "For the purposes of this section, kidney paired donations shall not be considered to involve the transfer of a human organ for valuation consideration."). At present the legislation has the strong support of UNOS, The American Society of Transplantation, and just about every other similar organization. It has passed the House by a 422 to 0 vote in March 2007 and the Senate unanimously in July.⁸ It will surely be signed into law. One estimate indicates that paired donations are involved in over 1000 transplants per year.⁹ Yet it is doubtful that the broad consensus on barter will lead to the relaxation of the use of cash in organ transplantation cases. It is fine to offer an organ worth one million dollars to get one of like value. Yet, as matters now stand, it is wholly immoral to offer \$75,000 in cash. There

⁸AST Applauds Congressional Passage of Paired Kidney Donation Legislation, March 9, 2007, *available at* http://news.yahoo.com/s/usnw/20070309/pl_usnw/ast_applauds_congressional_passage_of_paired_kidney_donation_legislation.

⁹ *Id.*, estimating a 14 percent increase in life transplantations off a base of somewhere between 6,000 and 7,000 transplants from living donors.

is little doubt that, as Roth (2007) reminds us, that the moral repugnance toward cash transactions plays an important role in public affairs.

Nonetheless, it is easy to outline other situations in which cash payments could increase the gains from trade. Thus assume the first donor-recipient pair is type A/type O, the second is type O/type B, and the third is type B/type A. The middle pair is self-sufficient, but without its participation, there is no sensible exchange involving the first and third pairs, because only the third pair can gain, as the type B/type O transaction is lethal. So the inability to use cash payment whenever there is a mix of balanced and unbalanced transactions could lead to a loss two lives.

One effort to overcome this pair imbalance under NOTA involves using cadaveric kidneys to make up the short fall. Thus suppose that one couple has an A donor and an O recipient. The A donor makes his gift to any person on the A list, either by directed donation or by taking the top person on the UNOS list. Thereafter his partner goes to the top of the O list for the return organ, which pushes the remaining O list recipients further down on the queue. The transaction raises a tricky moral issues because it introduces negative externalities to third persons, namely, the other O list recipients, who for each additional cadaveric transfer, according to the careful estimates of Ross and Zenios (2004, p. 641), have to spend an additional 7.3 days on the waiting list.

The question is whether that externality should be sufficient to prevent the use of cadaveric transfers to O-list donees who are part of the exchange program. Ross and Zenios (2004, p. 645) look at matters on the assumption that the UNOS list sets the correct collective priorities and thus on ethical grounds reject these transactions as “nonegalitarian” because “[such rejection] ensures that all on the wait list benefit from this option and therefore fulfills the criteria of justice as fairness” notwithstanding obvious efficiency losses, which they estimate could produce, on varying assumptions, between 414 and 1,150 additional kidneys. That is a lot of lives to pay for any ethical imperative, especially one that that suffers from two key defects. First, their view enhances the legitimacy of the UNOS criteria, notwithstanding all their internal weaknesses. Using the live/cadaver transactions will produce joint gains even if the cadaveric kidney received is of inferior quality.

Second, Ross and Zenios's (2004) critique does not go far enough behind the veil of ignorance. Thus suppose that when the basic rule was formulated, neither potential donors nor potential recipients knew either their roles or their blood types. At this point they cannot speak, as do Ross and Zenios, about "fairness to the O list recipients" because people are forced to make their judgments without knowing which side of the transaction they are on, or which blood groups they are in. So people behind the veil concede the proposition that these cadaveric transactions would hurt O group recipients. But they would also conclude that the net gains in overall supply would generate proportionate benefits to all, and thus tolerate the losses that will be sustained once people know their individual type and status. Stated otherwise, behind the veil of ignorance, we leave the ethically (and economically) problematic world of imbalanced transactions, and return to the less problematic world of universally balanced transactions. Armed with this greater insight, no one from the ex ante perspective profits from any overall efficiency loss, so these transactions would be approved. In a world without a UNOS list, no transactions would take this form, but so long as this list controls, then living-donor/cadaver-donor swaps help reduce the underlying resource inefficiencies of the UNOS system.

4.4. LifeSharers.

A somewhat different effort to reduce the chronic shortages with the current system is LifeSharers (2007),¹⁰ whose founder is the tireless David Undis. Unwilling to wait for action that unclogs the legislative logjam, Undis has put forward a program of preferential donations, whereby each program participant gets preferential rights over non-participants to receive a suitable cadaveric organ from other program participants (see also, for a variation on LifeSharers that operates in the current system, Nadel and Nadel 2005, pp. 312-23, which seeks to give additional points within the UNOS framework to those who promise to donate organs).¹¹ In effect, this is a weak form of promissory barter. If I promise to give you my kidney after death, then you promise the same. The program clearly seeks depends on an uncertain mix of self-interest and

¹⁰ In the interest of full disclosure, I am on the LifeSharers board and have signed up in the program.

¹¹ Once again, the proposal raises the same prospect that parties who are most likely to commit are those who are likely to be organ recipients, so that the market remains perpetually out of equilibrium.

altruism. Needless to say, the program attracts the strong criticism of those like Zink et al. (2005, pp. 8-9) who treat all efforts to expand supply as efforts to disrupt the current UNOS structure.

As of February 2007, no successful transplant has been brokered through LifeSharers. Indeed there are good reasons to expect this outcome. Persons with pure altruist sentiments do not need to join LifeSharers. They can just give their organs away in life or at death. Similarly the participants in kidney swaps are not conventional altruists, for their immediate familial return dwarfs any remote benefit they could obtain through LifeSharers. Given ordinary self-interest, procuring an organ right now to a loved one dominates the prospect of getting an organ in the distant future, so long as one is prepared to donate at that time. The current UNOS preference that puts live organ donors at the head of the queue should they need an organ (which again is not regarded as “valuable consideration”) is also likely to dominate than LifeSharers. In practice, the LifeSharers cohort will generate a nonexistent supply to meet persistent high demand. Put otherwise, the likely joiners are those who will need an organ, not those who are in a position to give one. In addition, the small base of members (under 7500) makes it unlikely that any match would occur, even if a greater proportion of program participants were suitable donors. Finally, it is unclear whether the current UNOS rules permitting directed donations to specific individuals also permit donations to anonymous members of a class—a point on which the Delmonico quotation above is somewhat evasive (see Stein 2005).

But the program still has an important role to play because it urges people to find some way within the law to challenge UNOS’s hegemonic authority. Neither Undis nor anyone else, to my knowledge, who is familiar with LifeSharers thinks that it is cure-all. Nevertheless, other proposals to use voluntary reciprocal altruism on a national scale try to seize a similar impulse, simply by first asking individuals if they would like to have an organ transplant to save their lives, and then to ask them, gently, if they are prepared on death to consent to organ donation (see, for example, Landry 2006). The same difficulties with strategic behavior remain, but it is yet another effort to expand the supply within the current framework.

5. CONCLUSION

The topic of organ transplantation has become one of the most intensely studied topics in recent times for two reasons. The first is that the large and growing shortages of suitable organs have brought forth a wide range of proposals to increase the available supply, all of which are preferable to the status quo. The second reason is that the topic itself raises difficult theoretical questions about the interaction of egoistic and altruistic behavior that have led to some strong predictions about the effect on aggregate supply of commercialization of the organ transplant market. This article has filled two gaps in that extensive literature. The first is to develop and defend a better theory to describe human behavior in these mixed cases. And the second is to understand the recent efforts to work within the NOTA prohibition in order to increase supply.

On the theoretical level, my descriptive theory of altruism allows it to be modeled as part of a general theory of supply and demand. The critical move is to recognize that the supply of organs can be positive even when the price is negative. The most likely implication of that simple framework that a somewhat greater number of organs would be available at a somewhat lower price if the forces of supply and demand, free of the various NOTA constraints, were allowed to equilibrate at a market price.

That descriptive theory suggests that the use of financial incentives will not disrupt the operation of transplant markets, and should be used, no matter what the mix of egoists and altruists, to redress a life-threatening shortage that has gotten worse over time. The relative strengths of altruism and egoism are hard to measure, but a close look at the various programs that have developed under the NOTA umbrella suggest that self-interest is the stronger but not exclusive force, which exhibits its greatest punch in controlled organ swaps. There is little reason therefore to think that any reform that removes or eases NOTA's total prohibition against organ transfers for valuable consideration should constrict supply or introduce some fundamental distortion of either social practices or donative behavior. Quite the opposite, lifting or easing NOTA's prohibition is likely to make a dent in the recurrent organ shortages, which in the name of high ethical standards have been the source of so much needless anguish.

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