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## ESSAY

# MARKETS FOR ORGANS: MYTHS AND MISCONCEPTIONS

*David Kaserman\**

### INTRODUCTION

For over three decades, there has been a severe and chronic shortage of cadaveric human organs suitable for transplantation. The ongoing shortage of kidneys, hearts, livers, lungs, and other solid organs has significantly hampered the ability of physicians to bring improved life-saving transplant technology to patients suffering from a variety of debilitating and often fatal diseases. As a result, thousands of individuals die each year because of the failure to obtain a suitable organ in time.<sup>1</sup> Thousands more are forced to undergo dialysis and other unpleasant but life-sustaining treatments while waiting for an organ (or death, whichever comes first).

It is noteworthy that this shortage of transplantable organs is not attributable to an inadequate supply of potential organ donors. While

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\* Ph.D. Economics 1976, University of Florida. The author has over 100 publications with ten prior papers on organ procurement issues as well as a monograph co-authored with A. H. Barnett on organ procurement that is currently in the publication process.

1. News Release, Bob Spieldenner, United Network for Organ Sharing, *Deaths Increase Despite Rise in Number of Transplants* (April 18, 2000), at [http://www.unos.org/Newsroom/archive\\_newsrelease\\_200000418\\_donornumber.htm](http://www.unos.org/Newsroom/archive_newsrelease_200000418_donornumber.htm). The most recent figure available indicates that 6,012 people who were on official transplant waiting lists died in 1999 while awaiting a suitable donor organ. This figure undoubtedly understates the number of deaths attributable to the shortage, perhaps by a considerable margin. Many patients are removed from waiting lists shortly before their death, because their physical condition has deteriorated to the point that they are unsuitable for a transplant operation. In addition, an unknown number of marginally acceptable patients are never placed on these lists due to the shortage conditions. *Id.*

estimates of the actual number of deaths that occur each year under circumstances that would allow for removal and transplantation of cadaver organs vary widely, all such estimates reveal a substantial pool of potential organ donors who, for a variety of reasons, fail to supply the needed organs.<sup>2</sup> A review of these estimates conservatively suggests that organ donations could at least double, given the existing number of potential donors.

The failure of the current procurement system to collect a larger portion of the cadaveric organs that are potentially available has spawned an extensive literature proffering a variety of proposals to alter the existing system in various fundamental and not-so-fundamental ways. Among these proposals, perhaps the most promising is a lifting of the legal ban on cadaveric organ purchases and sales that is contained in the 1984 National Organ Transplant Act, which would allow markets to form and organ prices to rise to their equilibrium, market-clearing levels.<sup>3</sup>

To an economist, this proposal provides an obvious and straightforward approach to resolving the organ or any other shortage. To many of the commentators on medical policy issues who are contributing to the literature in this area, however, the organ market proposal is highly suspect and has been challenged on both ethical and economic grounds.<sup>4</sup>

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2. See, e.g., Roger W. Evans et al., *The Potential of Organ Donors*, 267 JAMA 239 (1992); Steven L. Gortmaker et al., *Organ Donor Potential and Performance: Size and Nature of Organ Donor Shortfall*, 24 CRITICAL CARE MED. 34 (1996). These estimates suggest that somewhere between 30 and 50% of potential cadaveric donors' organs are currently collected.

3. The use of organ markets to resolve the ongoing shortage has been advocated by a number of authors over the years. See, e.g., Andy H. Barnett et al., *A Market for Organs*, 33 SOCIETY 8 (1996); Roger D. Blair & David L. Kaserman, *The Economics of Alternative Cadaveric Organ Procurement Policies*, 8 YALE J. ON REG. 403 (1991); Lloyd R. Cohen, *Increasing the Supply of Transplant Organs: The Virtues of a Future's Market*, 58 GEORGE WASH. L. REV. 1 (1989); Henry Harsmann, *The Economics and Ethics of Markets for Human Organs*, 14 J. HEALTH POL., POL'Y & L. 57 (1989); David E. Jefferies, *The Body as Commodity: The Use of Markets to Cure the Organ Deficit*, 5 IND. J. GLOBAL LEGAL STUDY 621 (1998); Richard Schwindt & Adrian R. Vining, *Proposal for a Future Delivery Market for Transplant Organs*, 11 J. HEALTH POL., POL'Y & L. 483 (1996).

4. Many others writing in this area fail to even consider the organ market proposal as a potential policy alternative. See, e.g., Arthur L. Caplan, *Sounding Board: Ethical and Policy Issues in the Procurement of Cadaver Organs for Transplantation*, 311 NEW ENG. J. MED. 981 (1984); Council on the Transplantation Society, *Commercialization in Transplantation: The Problems and*

Significantly, most, if not all, of these challenges appear to be founded upon rather blatant misconceptions involving some very fundamental economic issues.<sup>5</sup>

While errors involving economic concepts may be inevitable in a literature that has been dominated by non-economists, correction of such errors is nonetheless necessary if policy discussions and ultimate decisions are to be founded upon accurate information. The somewhat limited purpose of this paper is to identify and correct some of the more prominent economic misconceptions involving the organ market proposal that currently plague the literature in the hope that the resulting increased clarity will help to elevate the level of the ongoing debate. While I certainly do not intend or expect this discussion to transform readers into economists, the clarifications offered in this article should improve the overall understanding of the organ market proposal and how it can work to resolve this tragic shortage.

## II. MISCONCEPTION 1: DEFINITION AND MEASUREMENT OF THE SHORTAGE

Perhaps the most fundamental misconception surrounding discussions of the organ shortage involves the very definition of the term "shortage," and the corresponding measurement of the magnitude of that shortage. Specifically, several authors writing in this area have mistakenly interpreted the number of patients on a transplant waiting list as a direct

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*Some Guidelines for Practice*, 2 LANCET 715 (Sept. 28, 1985); Monique C. Gorsline and Rachelle K. Johnson, *The United States System of Organ Donation, the International Solution and the Cadaveric Organ Donor Act: "And the Winner Is. . ."*, 20 J. COR. L. 5 (1994); Laura A. Siminoff & Matthew D. Leonard, *Financial Incentives: Alternatives to the Altruistic Mock Organ Donation*, 9 J. TRANSPLANT COORDINATION 250 (1990).

5. This is not to say that other non-economic challenges to the use of organ markets to resolve the shortage are neither non-existent nor unimportant. These other, largely social or ethical concerns, however, can be (and have been) debated without direct reliance upon economic theory or concepts and are, therefore, beyond the scope of this paper. See also Melissa N. Kurnit, *Organ Donation in the United States: Can We Learn from Success Abroad?*, 17 B.C. INT'L COMP. L. REV. 405 (1994). Compare Caplan, *supra* note 4, at 981, with Gerald Dworkin, *The Case for Organ Sales*, 60 MOUNT SINAI J. MED. 66 (1993), and Janet Radcliffe-Richards, *Nepharious Goings on in Kidney Sales and Moral Arguments*, 21 J. MED. & PHILOSOPHY 375 (1996).

measure of the size of the shortage of a particular organ.<sup>6</sup> Such a view fails to recognize the crucial distinction between stocks and flows that is routinely emphasized in economic analysis. Economists define a shortage as a condition in which the quantity of a product demanded exceeds the quantity supplied *at the existing price*.<sup>7</sup> To appreciate what this definition implies for the organ shortage, two fundamental aspects of the concepts of supply and demand must first be understood.

First, both of these concepts refer to *schedules* relating the quantities bought and sold to various prices paid and received. That is, the term “demand” means a schedule, which may be expressed in the form of a table, graph, or equation that shows the quantities that will be purchased at all possible prices. A specific quantity, at some point along that schedule, is then referred to as the “quantity demanded” at the specified price. Similarly, “supply” is a schedule that indicates the quantities that will be placed on the market for sale at all possible prices. “Quantity supplied” refers to a single point along that schedule. Thus, the present shortage of transplantable organs is equal to the quantity demanded minus the quantity supplied *at the current price* of organs. Under the existing U.S. organ procurement policy, that price is zero.

Second, and extremely important for the discussion here, the quantities referred to in the definitions of both supply and demand are *flows*, not stocks. In other words, these quantities are expressed as some number of units of the product *per some interval of time*. To say that the quantity demanded or supplied of product X is 100 units at a price of \$10 per unit is meaningless unless we specify the time period over which these 100 units will be purchased or sold. Obviously, the demand and supply of a product will vary substantially depending upon the time interval over which they are defined.

This second point is crucial to understand, as it has been the source of

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6. See, e.g., Evans et al., *supra* note 2, at 239; Teri Randall, *Too Few Human Organs for Transplantation, Too Many in Need... and the Gap Widens*, 265 JAMA 1223 (1991).

7. The standard textbook definition of a shortage is an excess of quantity demanded over quantity supplied at the prevailing price. See ROBERT B. EKELUND, JR. & ROBERT D. TOLLISION, *MICROECONOMICS: PRIVATE MARKETS AND PUBLIC CHOICE* 67 (Addison-Wesley, 6th ed. 2000). Relying directly, then, on the distinctly economic concepts of supply and demand, it should be recognized that the subject of shortages is inherently economic in nature. As a result, economists should play a much more prominent role in policy discussions in this area.

considerable confusion in debates about the organ shortage and alternative policies formulated to resolve it. Specifically, participants in these debates often have explicitly or implicitly confused the number of patients on transplant waiting lists, which is a stock, with the concept of a shortage, which is a flow.<sup>8</sup> The size of the waiting lists for transplantable organs represents the accumulation of the excess demands (shortages) of all preceding periods, adjusted for the attrition that occurs from patients dying during the specified time interval. As such, observed waiting lists greatly exaggerate the magnitude of the actual organ shortage on an annual (or any other time period) basis.

To illustrate this important distinction, data from the United Network for Organs Sharing (UNOS) indicates that the waiting list for kidneys stood at 42,364 patients in 1998.<sup>9</sup> However, the actual annual shortage of kidneys is not equal to this number. Rather, the shortage is approximated by the *increase* in the number of people on the waiting list over the preceding year's figure. It is that number—the annual *change* in the waiting list—that indicates the amount by which the quantity demanded in 1997 exceeded the quantity supplied in that year. With UNOS reporting 38,236 people on this list in 1997, the actual shortage in that year was only 4,128 (42,364 minus 38,236) kidneys, or just over 2,000 donors, if there is no adjustment for attrition due to deaths of patients on the list.<sup>10</sup> Note that this number is less than ten percent of the number of patients on the waiting list.<sup>11</sup>

Obviously, if 4,128 additional kidneys had been supplied in 1997, the

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8. See Evans et al., *supra* note 2, at 239; Randall, *supra* note 6, at 1223; Siminoff & Leonard, *supra* note 4, at 20. All of these articles appear to confuse waiting lists with shortages. That confusion, in turn, appears to lead these authors to conclude mistakenly that the potential supply of cadaveric donors is insufficient to eliminate the organ shortage at any conceivable collection rate (i.e., at any rate up to 100%).

9. See United Network for Organ Sharing, *Critical Data Waiting List Snapshot by Date*, at [http://www.unos.org/Newsroom/critdata\\_main.htm](http://www.unos.org/Newsroom/critdata_main.htm) (last visited Apr. 19, 2002).

10. *Id.* Not all cadaveric donors yield two transplantable kidneys. Currently, the number of kidneys per donor stands at approximately 1.7, due to screening of unacceptable organs, wastage, and other factors.

11. *Id.* Clearly, this does not mean that all 42,364 patients would not benefit from a kidney transplant in that year. It simply suggests that if we are to discuss shortages in a meaningful manner, it is first necessary to understand the definitions of the concepts upon which such a discussion must be based.

waiting list would have remained stable at 38,236. That is, the backlog would not have grown. Further, if 42,364 kidneys had been supplied in 1998, the entire waiting list that had built up over all prior years of shortages could have been eliminated completely in a single year. Then, if that number of kidneys continued to be supplied in subsequent years, an extremely large surplus would materialize immediately. Of course, given the backlog of patients on the waiting list, an annual surplus is highly desirable for some period into the future in order to reduce that list over time.<sup>12</sup> Once the backlog is eliminated by this series of surpluses, however, a simple clearing of the annual demand for kidneys will be sufficient to prevent future backlogs from developing.

Clarification of this issue is important, because it directly affects the perceived ability of any policy change to eliminate the shortage under the constraint provided by the existing pool of potential organ donors. Specifically, if one mistakenly views the shortage as being equal to the waiting list, one might then conclude (incorrectly) that complete resolution of the shortage is not feasible under any policy option.<sup>13</sup> In addition, overestimation of the shortage by reference to the waiting list would lead to a gross overestimate of the price that would be required to equilibrate the market.<sup>14</sup> Such an overestimate, in turn, would cause an underestimation of the cost effectiveness of the organ market proposal. As a result, unbiased evaluation of that proposal requires a correct definition and measurement of the shortage as a flow rather than a stock.

### III. MISCONCEPTION 2: BLACK MARKET VERSUS OPEN MARKET OUTCOMES

In a truly ironic twist of logic, some authors have cited various human

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12. *Id.* The shortage versus backlog distinction is analogous to the distinction between the federal government's annual deficit and the national debt. The former is a flow, while the latter is a stock.

13. Regardless of the feasibility of eliminating the shortage altogether, presumably no one would argue that reducing it by adopting policies that increase the supply of cadaveric organs is undesirable. Thomas G. Peters, *Life or Death: The Issue of Payment in Cadaveric Organ Donations*, 265 JAMA 65, 1302-03 (1991) (arguing for a straightforward policy selection criterion – viz, the optimal policy is the one that results in the largest number of organs being made available for transplantation (and, therefore, the largest number of lives saved)).

14. For a very preliminary estimate of the market-clearing price of cadaveric donors, see Frank A. Adams, III, Andy H. Barnett & David L. Kaserman, *Market for Organs, The Question of Supply*, 17 CONT. ECON. POL'Y 142-55 (1999).

rights abuses and extraordinarily high prices that have been reported in association with black market activities as harbingers of the sorts of outcomes likely to accompany legalized organ markets. This line of “reasoning” is equivalent to arguing that legalization of liquor sales would result in the sorts of mafia-related activities that arose during prohibition.

The truth is that the types of behavior and price levels that frequently accompany black market sales tend to disappear when trade is legalized.<sup>15</sup> A legal proscription on sales of any product creates an artificially high market value (i.e., price) as the quantity supplied is suppressed below market-clearing levels. That (perhaps greatly) inflated price then creates a strong profit incentive to violate the law by supplying the product and charging what the market will bear. As with prostitution, alcohol, drugs, or smuggling, the resulting extraordinary profits serve to compensate those engaged in illegal trade for the risk of prosecution. Such profits also create strong incentives for those criminals to protect their lucrative black market sales from entry by other would-be illegal suppliers through a variety of (often violent) means. As a result, black market trade, which arises in response to a proscription of legal sales, generally leads to high prices and socially undesirable criminal activities.

Organ markets are no exception. The law does not proscribe organ trade altogether. Instead, it specifies that all exchange occur at a price of zero—any compensation to the organ donor is explicitly forbidden. The economic consequences of that proscription for kidneys are depicted in Appendix 1. Here, the curve labeled D represents the demand for kidneys suitable for transplantation. This function is likely to be extremely price-inelastic (i.e., very steep) over a wide range of prices.<sup>16</sup> The curve labeled S, then, represents the supply curve for kidneys that would exist in the absence of the zero-price legal constraint. At the present legal price of zero,  $Q_0$  kidneys are supplied and  $Q_1$  kidneys are demanded, yielding a shortage of  $Q_1 - Q_0$  kidneys per year. If (legal)

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15. See MARK THORNTON, *THE ECONOMICS OF PROHIBITION* (Univ. of Utah Press, 1991).

16. The demand curve in Appendix 1 is shown as much more price-elastic than is expected to be the case. This lower slope is necessary to illustrate conveniently the point being made here – i.e., to be able to depict the black market price on the graph. Actual organ demands are likely to be vertical, or nearly vertical, over a wide range of prices. See generally Blair & Kaserman, *supra* note 3 (offering a more detailed explanation of why organ demand curves are likely to be extremely price-inelastic).



kidney prices were allowed to rise above zero, the number of kidneys supplied would expand along  $S$ .<sup>17</sup> Thus, in accordance with the law of supply,  $S$  slopes upward.<sup>18</sup>

Given the demand and supply curves depicted above, four important conclusions follow. First, as long as positive prices are proscribed, only  $Q_0$  kidneys will be supplied, and a shortage situation will continue to prevail.<sup>19</sup> Second, the zero-price-induced restriction in the number of kidneys supplied creates an artificially high black market price, which is shown as  $P_b$  in the graph.<sup>20</sup> Third, this inflated black market price greatly exceeds the equilibrium price,  $P_e$ , that that would prevail with legalized trade. And fourth, the equilibrium quantity of kidneys obtained with legalized trade is likely to exceed  $Q_0$  by a wide margin.<sup>21</sup>

Legalization of trade, then, would allow the market price to fall as legitimate businesses enter the market and increase supply. In addition,

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17. *Id.* There is a possibility that organ supply curves could shift to the left of  $Q_0$  as low but positive prices are offered, resulting in a discontinuity of the supply function at  $Q_0$ . Preliminary evidence, however, suggests that such a discontinuity is not important empirically. See Adams, Barnett & Kaserman, *supra* note 14, at 148, 153. Figure 1, therefore, abstracts from this possibility in order to simplify the exposition. Such simplification does not invalidate the point being made here.

18. The supply curve of cadaveric organs—including kidneys—is expected to be relatively price-elastic (or flat). For a discussion of the reasoning behind this expectation and an empirical estimate of this supply curve, see Adams, Barnett & Kaserman, *supra* note 14, at 153-54.

19. Attempts to shift  $Q_0$  to the right through educational campaigns designed to encourage increased donorship have experienced some success over the years. That is, the number of cadaveric organs collected at a zero price has increased somewhat. Such increases, however, have consistently failed to keep pace with the growing demand. Consequently, the annual shortages have persisted and the waiting lists have grown commensurately.

20. Technically,  $P_b$  provides a lower bound on the maximum prices that some individuals would be willing to pay for a kidney with the quantity supplied restricted to  $Q_0$ . Because the organs that are supplied are not rationed to potential transplant recipients on the basis of price, some individuals whose willingness, and ability, to pay lies above  $P_b$  will not receive a transplant with  $Q_0$  organs allocated. As a result, black market purveyors of illegally supplied organs may be able to obtain a price well above  $P_b$ . See David L. Kaserman & Andy H. Barnett, *An Economic Analysis of Transplant Organs: A Comment and Extension*, 19 ATL. ECO. JOURNAL 57-63 (1991).

21. Indeed, if, as expected, organ demand is perfectly inelastic over the  $0$ - $P_e$  price range,  $Q_e$  will equal  $Q_1$  (i.e., no patients will be rationed out of the transplant market as a result of positive organ prices). See also Section IV, *infra*.

costs will decrease as the risks of both prosecution and violent actions by rivals are eliminated. The outcome is lower prices, an increase in the volume of trade, and a cessation of criminal activities.<sup>22</sup> Thus, the types of conduct associated with illegal suppliers involved in black market trade and the prices at which such trade takes place do not accurately indicate the behavior and prices likely to result from legalized sales. In fact, it has long been recognized that the most effective remedy for undesirable black market conduct is to lift the ban, allowing legal trade to occur at market-clearing prices. Stated succinctly, the cure for black market abuses is legalization of trade.

#### IV. MISCONCEPTION 3: MARKETS FOR PROCUREMENT VERSUS MARKETS FOR ALLOCATION

A third misconception regarding organ markets involves the distinction between the use of market forces to procure organs for transplantation and the use of market forces to distribute or allocate the organs collected among transplant patients. In particular, several commentators have mistakenly assumed that the former necessarily implies the latter.<sup>23</sup> They argue that allowing organ procurement firms to purchase cadaveric organs from families of the deceased at a positive price requires those firms to charge recipients of those organs (i.e., transplant patients) a positive price for the organs they receive. For example, Siminoff and Leonard write that:

Although the specifics for proposed market and incentive-based systems vary significantly, there are also many points of consensus. The most consistent feature is that of reciprocity: organ donors should be granted some sort of consideration for use of their organs, and *recipients should make some sacrifice in order to receive them.*<sup>24</sup>

Not only is this claim not generally reflected in the literature in this area, but it also fails to make the important distinction between procurement and allocation policies. These policies are entirely separable, and markets may be used for either, neither or both.

The argument by Siminoff and Leonard fails to accurately characterize

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22. These anticipated results of legalization of trade appear to be borne out by the evidence from other markets in which such legal bans have been lifted (e.g., alcohol, drugs and prostitution).

23. See, e.g., Siminoff & Leonard, *supra* note 4.

24. *Id.* at 253 (emphasis added).

the literature on this subject. Most authors who have advocated the use of market forces to resolve the organ shortage have recognized that payment to donors (or donors' surviving family members) does not require any payment by organ recipients.<sup>25</sup> Indeed, positive prices for organ procurement requires no change whatsoever in the methods currently used to allocate organs to transplant candidates.<sup>26</sup> In fact, the current allocation system administered by UNOS could continue to operate unchanged. The only difference would be that, with organ markets, many more organs would become available for distribution. Furthermore, in the absence of a shortage, allocation issues would be largely moot. The "tragic choices" concerning who should live and who should die result from the shortage, and the policy that creates this problem would disappear with the formation of organ markets.

Under the current system, most transplants are covered by some form of third-party payment—either the End Stage Renal Disease Program operated under Medicare or private insurance. Under the third-party payment regime, transplant centers are already reimbursed for the costs of organ acquisition, including the costs of removal and transportation.<sup>27</sup> With organ markets, organ procurement companies could simply bill the transplant centers at the market prices of the acquired organs. These expenses could then be incorporated directly into the center's organ acquisition costs, and reimbursement could remain unchanged. Patients need not be billed for these organs, just as they are not currently billed for other organ acquisition expenses. Thus, allocation and billing could continue to operate unchanged.

This point is significant with respect to the organ-procurement policy debate because opponents of organ markets argue that this approach would discriminate against the poor. This argument is a complete non sequitur for two reasons. First, it presumes that equilibrium organ prices will be high, confusing observed black market prices with likely market-clearing prices under legalized trade. Second, it presumes that patients will be required to pay these prices out of their own pockets, despite the

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25. No one, to my knowledge, has required that such use be tied to the proposal to use market forces to procure organs. See Cohen, *supra* note 3 (noting the possibility of using market force to allocate organs to recipients while at the same time noting the separability of procurement and allocation policies).

26. See, e.g., Barnett et al., *supra* note 3.

27. Roger W. Evans, *Organ Procurement Expenditures and the Role of Financial Incentives*, 269 JAMA 3113, 3115 (1993).

availability of third-party coverage. Both presumptions are false.

In fact, the poor appear to be one of the principal potential beneficiaries of organ markets. Not only will donors, many of whom are poor, be paid, but recipients will face a much larger number of organs available for transplantation, thereby eliminating incentives for discrimination that currently exist in the allocation process.<sup>28</sup> By recognizing the distinction between markets for procurement (which many commentators have proposed) and markets for organ allocation (which few have proposed), readers can separate this particular piece of chaff from the wheat of the organ procurement policy debate.

#### V. MISCONCEPTION 4: GENEALOGY OF THE CURRENT SYSTEM

Although not explicitly stated, the assumption made by many authors writing in this area is that the existing altruistic system of organ procurement was implemented through a conscious, if not formal, policy selection process. That is, some parties to the debate appear to implicitly believe that the current policy was selected from a set of organ procurement options through a comparative evaluation of competing choices. That is not the case. Rather, the existing organ shortage has emerged from a public policy devised and implemented more by historical accident than conscious design. Specifically, the earliest transplants were performed using kidneys donated by living relatives of the recipients. At that time, transplantation technology—in particular, the state of knowledge regarding immunosuppressive therapy—effectively precluded the use of cadaveric organ donors. As a result, organ transplant candidates brought the donor with them to the hospital for the transplant operation. If there was no acceptable living donor, there was no transplant operation. Consequently, there were neither waiting lists nor apparent shortages.

Under the living-related donor system, there was no need for payment to encourage donor cooperation. Kinship between the donor and recipient was thought to be sufficient motivation for organ supply. Where it was not, payment or coercion by family members could be arranged without resorting to middlemen, who are generally required for market

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28. Radcliffe-Richards, *supra* note 5, at 377 (pointing out the irony of the position that the poor are helped by a ban on organ sales: “Our indignation on behalf of the exploited poor seems to take the curious form of wanting to make them worse off still.”). Radcliffe-Richard’s paper deserves a careful reading by anyone offering policy advice in this area.

exchange.<sup>29</sup> Such intra-family pressure and/or outright payment remained out of the sight of the transplant centers and attending physicians. Therefore, a system of altruistic supply made sense in this setting, and reliance upon such a system did not seriously impede the use of this emerging medical technology because of its sole reliance on living-related donors.

That situation gradually changed, however, as new drugs, improved tissue matching, and advanced surgical procedures allowed for transplantation of cadaveric organs and improved transplant success rates. Significantly, this new ability to make use of cadaveric organs expanded the application of transplant technology to vital organs other than kidneys. While difficult to pinpoint a precise moment, organ waiting lists appear to have emerged during the 1970s as transplant candidates began to form queues for hoped-for cadaveric organs. These queues were generally managed by the transplant physicians located at the center where the operation was to be performed.

In 1972, Congress established the End Stage Renal Disease Program. This program provided funding for kidney patients, including both dialysis services and renal transplants. Such funding increased the demand for kidney transplants by providing third-party payment and by keeping more potential transplant recipients alive for much longer periods of time through dialysis treatment. In addition, during the mid-1980s, private insurance companies increasingly began to provide coverage for other non-renal organ transplants, such as hearts and livers, as these procedures progressed from the experimental stage to accepted medical treatments.<sup>30</sup>

The effect of these developments has been the appearance and subsequent growth of an observable shortage of cadaveric organs and the waiting lists created by that shortage. Despite this shortage, the public policy inherited from the former days of living-related donor transplants has never been seriously questioned or systematically evaluated. In fact, in 1984, that *de facto* policy was codified into law through passage of the National Organ Transplant Act, which explicitly proscribes any payment

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29. Ronald Bailey, *Should I Be Allowed to Buy Your Kidneys?*, FORBES, May 28, 1990, at 368. This article reports that one physician has estimated that somewhere between 15% and 20% of living related donors currently receive some sort of economic inducement to supply the needed organ.

30. See Richard Rettig, *The Politics of Organ Transplantation: A Parable of Our Time*, 14 J. HEALTH, POL. POL'Y AND L. 191, at 202 (1989).

to organ donors.<sup>31</sup>

Interestingly, the 1984 Act was passed in response to an entrepreneurial attempt by a Virginia physician to alleviate the growing organ shortage by brokering living donor kidneys.<sup>32</sup> The medical community's outrage, and its stringent defense of the altruistic system, created the political pressure that resulted in the passage of this legislation. Similar legislative action soon followed in all fifty states.<sup>33</sup> As a result, the altruistic system was firmly locked into place without any serious inquiry regarding its relative effectiveness in an environment of reliance on cadaveric donors.

Thus, an organ procurement policy that was a natural component of a transplant system which focused exclusively on living related donors was institutionalized for a system that now relies primarily on cadaveric organs from unrelated, and generally unknown, donors. That policy is the root cause of the organ shortage, and it is past time for that policy to be examined in light of current conditions.

#### CONCLUSION

A fundamental reconsideration of our cadaveric organ-procurement policy is overdue. Far too many patients have suffered and died in the name of an atavistic policy, which has as its principal claim to superiority the denial of payment to organ donors and their surviving family members. This denial has resulted in a three-decade shortage of cadaveric organs that has caused unnecessary deaths, inflated expenditures, difficult allocation issues and various sorts of undesirable black market activities.

In weighing the alternative policy options that are available to ameliorate or eliminate this shortage, it is imperative that the likely performance properties of each policy be clearly understood. Rational

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31. 42 U.S.C. § 274 (e) (1994). This law proscribes payments to either living donors or to families or estates of cadaveric donors, stating, in part, that it is illegal to "knowingly acquire, receive, or otherwise transfer any human organ for valuable consideration for use in human transplantation. . . ." *Id.*

32. See Susan H. Denise, *Regulating the Sale of Human Organs*, 71 VA. L. REV. 1015, 1021 (1985).

33. Apparently, not all states explicitly proscribe payments to organ donors to encourage their consent to remove the organs of the deceased. See Lisa E. Douglas, *Organ Donation, Procurement, and Transplantation: The Process, the Problem, the Law*, 65 UMKCL. REV. 201 (1996).

policy selection requires accurate information regarding all available options. At present, the most promising option—organ markets—is plagued by a combination of misconceptions and a quasi-political correctness bias that tend to cause various commentators to either discount it heavily or rule it out altogether. Hopefully, this discussion will help to clarify this particular policy option and better inform this important policy debate.

FIGURE 1  
Legal Versus Black Market Trade





