Economic Analysis on the Organ Market and Possible Solutions

Constituents are now calling on reform in the Organ-transplant program after a recent Wall Street Journal article discussed the dismal nature of the U.S.’s program and what foreign governments are currently doing in order to fix their shortage problems.

As the article explains, this nation’s organ program is donor-based. Those in need of organs wait on a waiting list for an available organ. The article points out kidney transplants as an example of the current market. According to the article, 83,000 recipients were in need of a kidney in 2007, but only 16,500 received kidneys and almost 5,000 died while waiting. By the end of 2007, about 61,500 recipients were still on the kidney-waiting list, and 5,000 lives were lost due to the inefficiency of the current donor-based program. Figure 1 shows the current state of our donor-based organ program. During all analysis, it is assumed that organs follow the Laws of Supply and Demand.

Donated organs that are rationed by a waiting list have a zero price (this is the supply of organs). This existing supply is perfectly inelastic and is the fixed quantity offered by willing donors. The supply curve reflects this inelasticity in the diagram. The demand for organs follows the Law of Demand, and the demand curve will reflect this by showing that some are willing to pay for organs, although illegal. This fact that some are willing to pay for organs has created a black-market for illegally harvested organs. The price of organs is legally capped at zero, and at zero-price, we see a large gap in demand and supply. More demand for organs than the current supply is causing the enormous shortage. The constituents need for equity is fueling their frustration with the system. It is considered unfair that so many are dying or not being treated because there is such a shortage of supply.

One proposal is that total deregulation should be practiced for organ-transplants. If this were put into action, a legal market for organs would be created. Figure 2 shows the supply/demand diagram that would occur if deregulation occurred. “S” is the original supply of organs (with regulation) and “S^1w” is the projected supply curve with deregulation.

With deregulation, the supply curve on the diagram will change because a free-market has been created, and no government cap is in place. The demand for organs will not change if organ-transplants are regulated or unregulated. With deregulation, donors will know they will be able to receive monetary compensation for their organs, thus less will be willing to give their organs at zero-price compared to the supply during regulation. With deregulation, an equilibrium point can be reached in the market where the quantity of organs supplied will be equal to the quantity of organs needed (q^*) at a certain price (p^*).
Below this equilibrium point (at lesser prices than at equilibrium, $P_S$), there will still be a shortage of organs and buyers will be inclined to raise their reservation price. Above this equilibrium (at higher prices than at equilibrium, $P_E$), there will be an excess of organs, and it will be necessary for suppliers to lower their requested price for the organ.

With regulation, there was an inefficient allocation of resources, because with organs like kidneys, people only need one to survive, but are born with two. There is no monetary advantage to donating a kidney. But with a deregulated market, there would be a very efficient allocation of resources: Donors would continue to live perfectly normal lives with one kidney, the donors would have extra money, and the organ recipients would also be able to live normal lives with their new kidney. But with this allocation of kidneys in a deregulated market, many would not be able to afford a kidney. If the number of patients who are not able to afford a kidney in this deregulated market is more than the number of kidneys added to the supply, then a deregulated market is an inequitable solution. Many also feel that it would be unmoral to deny a recipient access to organs because the recipient cannot pay for the organ in the deregulated market.

A number of foreign countries have adopted policies to reduce their shortages of organs while they were on the donor-based organ program. In Iran, if a deceased donor cannot be found for a recipient, the government will pay and give special health benefits to a willing donor and the recipient also pays for the kidney. Charitable organizations sometimes pay donors if recipients cannot pay themselves. This process has eliminated Iran’s shortage of organs by (1) increasing the supply of organs by giving a monetary reward to donors and (2) connecting donors and recipients through a non-profit organization. This policy is a very efficient allocation of resources. But without the charity organizations, many possible-recipients couldn’t afford the organ due to the price, making this policy not very equitable. Relying on possibly volatile charity organizations is the only way that this policy is equitable in Iran.

In many places in Europe, a “presumed consent” model is in place to fix this organ shortage. Under this policy, everyone is presumed to be a potential organ donor, unless they consciously opt-out. Under this policy, there would be an increase in the supply of organs, but many would decide to opt-out because there is no personal incentive to be a donor. The allocation would only be efficient if the government were to quickly connect recipients and donors in a cost-efficient manner. This option is not as equitable as Iran’s solution because the policy might not increase the supply of organs enough to satisfy demand.

If I were to recommend a policy that is directly discussed in the Wall Street Journal article, I would recommend “routine removal.” Through this measure, doctors who are present during the death of a possible donor, or doctors performing autopsies, are allowed to quickly harvest the organs from a dead body with little or no family approval. With this policy, there is an extremely efficient allocation of
resources, because, in the case of kidneys, two kidneys can be harvested from a body, compared to only one that can be harvested from a living donor. This option is also very equitable because this is not inhibiting anybody from receiving organ transplants, while increasing the supply of organs. In other words, there are very few trade-offs.

In order to greatly increase the supply of organs, while not inhibiting any possible-recipient from gaining access to the supply, I would recommend adopting a combination of “routine removal” and non-profit organization model used in Iran. Figure 3 graphically shows this change in supply. “Routine removal” will increase the quantity of accessible organs at zero-price and with a non-profit organization that connects potential-recipients with donors, the supply will increase even more. If no organ from a deceased donor can be found for a potential recipient, this organization will offer a set amount of money to give to live donors. The government will set the amount of money given to the donors, making the supply inelastic, because the government will not offer any more money than the set amount, and the potential-donor will need to either lower their minimum price, or not donate at all. If the amount of money given to donors is just right, then equilibrium will be created where the quantity of organs supplied and demanded (q*) are equal at zero-price. This supply curve where equilibrium is met at zero-price (S) is the curve that the government wants to attain. But if the government finds that there is still a shortage in organs (S_S) or an excess of supply of organs (S_E) then the government can decide on changing the set amount of money given in the future. Through this legislation, the government will be offering all potential-recipients access to free organs, while getting the most organs possible from deceased donors and getting more organs by giving living potential-donors a monetary incentive to donate.
The Organ Market and Possible Solutions

Graphs

**Figure 1:**

- Price vs. Quantity
- Shortage

**Figure 2:**

- Price vs. Quantity
- Market Equilibrium
- Price Equilibrium

**Figure 3:**

- Price vs. Quantity
- Supply Shifts
- Market Analysis