

Castro, Walter; Elías, Julio

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**INJECTING ADAM SMITH'S IDEAS IN  
THE MARKET FOR KIDNEY TRANSPLANTS**

**Walter Castro y Julio Elias**

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## **Injecting Adam Smith's Ideas in the Market for Kidney Transplants<sup>1</sup>**

Walter Castro (Fundación Libertad and Universidad Francisco Marroquín)

Julio Elias<sup>2</sup> (Universidad del CEMA and UChicago/UCEMA JILAEE)

April 20, 2022

### **Abstract**

Organs for transplantation are extremely valuable, and their shortage has become one of the most burning public policy issues in most countries with developed transplant programs. Could the kidney transplantation system benefit from an injection of Adam Smith's ideas? In this paper, we combine Adam Smith's ideas of both *The Theory of Moral Sentiments* and *The Wealth of Nations* to analyze the main developments of the market for kidney transplantation, including kidney exchange, default rules for deceased donations (presumed consent versus informed consent), priority rules, and proposals to pay organ donors. Injecting Adam Smith's ideas into this problem bring new insights in terms of public policy and market design. For instance, his theory of equalizing differences, exposed in Book I, Chapter X, of the *Wealth of Nations*, provide a base to estimate what would be the price of a kidney in a legal market (Becker and Elias 2007). His views about human decisions struggling between 'passions' and the 'impartial spectator' and on the difficulties of organizing the economic life appealing mainly to benevolence, and other sentiments toward close ones, are illuminating for policy design of any system of donation (paid, non-directed donations, or exchanges) by providing an understanding of what motivates people in the context of markets. Considering Adam Smith's ideas, we also evaluate many restrictions currently in place in the market for kidney transplantations that impose severe limits on individual decisions, some of them to make up for a possible lack of self-command. We hope we show with our analysis not only the topicality of Smith's ideas but the importance for the economic analysis of combining both the *Theory of Moral Sentiments* and the *Wealth of Nations*, and not to consider them separately as isolated masterpieces.

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<sup>2</sup> Corresponding author, [je49@ucema.edu.ar](mailto:je49@ucema.edu.ar)

## **I. Introduction**

Organs for transplantation are extremely valuable, and their shortage has become one of the most burning public policy issues in most countries with developed transplant programs. The shortage of organs translates into long waits for patients to access to this preferred treatment and many of them die while waiting. Despite the enormous burden that the current system places on people in need of an organ, waiting lists for organs continue to grow in most countries. Finding an effective way to increase the supply of organs would reduce waiting times and many unnecessary deaths, and greatly alleviate the suffering that many sick people endure while waiting for a transplant.

Modern economic analysis lies its foundations on the Economic Principles developed by Adam Smith in the *Wealth of Nations* and has been extended with many ideas developed by Smith in the *Theory of Moral Sentiments*. George Stigler used to say: 'There's nothing new in economics. Adam Smith had said it all'. According to Ronald Coase (1977), 'The *Wealth of Nations* has many ideas from which to choose and many problems to ponder. Though the time may come when we will have nothing more to learn from the *Wealth of Nations* or, more accurately, when what we would learn would be irrelevant to our problems, that time has not yet been reached nor will it, in my view, be reached for a long time to come'. Could the kidney transplantation system benefit from an injection of Adam Smith's ideas?

In this paper, we use Adam Smith's ideas to analyze the main developments of the market for kidney transplantation, including kidney exchange, default rules for deceased donations (presumed consent versus informed consent), proposals to pay live donors and the families of deceased donors, and donor priority rules. Injecting Adam Smith's idea into this problem bring new insights in terms of public policy and market design.

When an economist observes a gap between demand and supply in some market, his next step is usually to look for the obstacles that prevent supply from satisfying demand. In the case of the market for organ

transplants, these obstacles are obvious, since practically no country, except for Iran, allows the use of monetary incentives to acquire organs for transplantation.

In Section 2, we analyze the proposal to compensate organ donors building on Adam Smith's perspectives and ideas. His theory of equalizing differences, exposed in Book I, Chapter X, of the *Wealth of Nations*, provide a base to estimate what would be the price of a kidney in a legal market (see Becker and Elias 2007). His discussion of the conflict that is unleashed in the human being between passions and the impartial spectator, exposed in the *Theory of Moral Sentiments*, provide important insights for market design of any system of donation (paid, non-directed donations, or exchanges), to think in ways to avoid impulsive behavior and reducing the likelihood of rash donations. Considering Adam Smith's ideas, we also evaluate many restrictions currently in place in the market for kidney transplantations that impose severe limits on individual decisions, some of them to make up for a possible lack of self-command.

In 2019, 29% of kidney transplants in the US were performed with live altruistic donors. Unfortunately, a healthy person's kidney is often incompatible with the intended recipient. There would be more live-donor transplants if any altruistic live donors who wanted to help a loved one in need could do so. One of the most important innovations in the market for kidney transplantations is the development of a marketplace for Kidney Exchange between internally incompatible patient donor pairs. The simplest type of kidney exchange is between two incompatible patient donor pairs. In more complex cases, additional patient donor pairs can be included generating more than 2 kidney transplants. In section 3, we combine Smithian insights from the *Wealth of Nations* and the *Theory of Moral Sentiments* into the logic of altruism and the design of kidney exchange markets.

An important source of kidneys for transplantation comes from the undirected generosity of people who is willing to donate their organs after they die. An organ procurement system from deceased donors must establish a nonaction default rule, that is, a condition that is imposed when the will of a deceased potential

donor is unknown. The United States has an informed consent system, requiring consent for deceased donation, either by the individual having previously registered as an organ donor or by the deceased's next of kin. A policy that has been proposed to boost deceased organ donations is to shift the default rule for deceased organ donations from an Informed Consent to a Presumed Consent System. In section 4, we analyze how should we understand the will of deceased organ donors, and what would the impartial spectator have to say about obtaining said consent.

Under the U.S. organ allocation system, the priority to receive a kidney from a deceased donor is based on many different factors, including waiting time and the survival benefit from the transplant (starting in 2015). One way to incent registration is to promote reciprocity by giving highest priority on the organ donor waiting lists to those who previously registered as donors than non-registered donors. Section 5 analyzes priority rules using Adam Smith's insights on reciprocity. Section 6 concludes.

## **II. Adam Smith and the Market for Kidney for Transplantation<sup>3</sup>**

In the US, the number of kidney transplants has increased from about 10,000 in 1990 to over 20,000 in 2019, as shown in Figure 1. However, this increase in kidney transplants has not been close to the surge in demand. Almost 17,000 persons were waiting for a kidney transplant in 1990. But this number grew rapidly, so that about 95,000 persons were on this waiting list by 2019. The waiting list has grown by about 2,700 people per year, while transplants only increased by 350 per year.

The main reason for this persistent shortage is the ban on payments to donor (i.e. the implicit regulated price of zero for kidneys for transplantation). Adam Smith explains the adverse effects of price regulation:

'When the government, in order to remedy the inconveniencies of dearth, orders all the dealers to sell their corn at what it supposes a reasonable price, it either hinders them from bringing it to market which

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<sup>3</sup> This section is based on Castro and Elias, 2021a.

may sometimes produce a famine even in the beginning of the season; or if they bring it thither, it enables the people, and thereby encourages them to consume it so fast, as must necessarily produce a famine before the end of the season. The unlimited, unrestrained freedom of the corn trade, as it is the only effectual preventative of the miseries of a famine, so it is the best palliative of the inconveniences of a dearth; for the inconveniences of a real scarcity cannot be remedied; they can only be palliated'. (WN, 4.v)

In 2007, one of us (Julio Elías) published with Gary Becker a paper that uses the economic approach to analyze the consequences of legalizing the purchase and sale of kidneys for transplants. Using supply and demand analysis, we show that monetary incentives could increase the supply of organs sufficiently to eliminate the large queues. These incentives would not raise cost of transplants by a large percent, and would eliminate waits, raise life quality, and greatly cuts deaths.

At that time, one of the big questions raised by this controversial proposal was what would be the price of a kidney in a legal market, something that at first glance seems invaluable, a million dollars? hundred dollars? One of the contributions of the paper was precisely to address this question using one of the great ideas of Adam Smith: The Theory of Equalizing Differences, exposed in Book I, Chapter X, of the Wealth of Nations.

In that chapter, Smith explains the Wages and Profit in the Different Employments of Labor and Stock. The chapter begins by pointing out that:

'The whole of the advantages and disadvantages of the different employments of labor and stock must, in the same neighborhood, be either perfectly equal or continually tending to equality. If in the same neighborhood, there was any employment evidently either more or less advantageous than the rest, so many people would crowd into it in the one case, and so many would desert it in the other, that its advantages would soon return to the level of other employments...



The five following are the principal circumstances which, so far as I have been able to observe, make up for a small pecuniary gain in some employments, and counter-balance a great one in others: first, the agreeableness or disagreeableness of the employments themselves; secondly, the easiness and cheapness, or the difficulty and expence of learning them; thirdly, the constancy or inconstancy of employment in them; fourthly, the small or great trust which must be reposed in those who exercise them; and fifthly, the probability or improbability of success in them'. (WN, 1.x.1)

Following Smith's idea, the donation of an organ for transplantation offers advantages and disadvantages for which the market has to compensate to 'tend to equality'. How much compensation is required to induce a person to sell a kidney? We estimate the price of a kidney from a living donor by calculating how much additional income an individual will require to be indifferent between selling a kidney or not. Specifically, we assume that the reserve price of an organ has three main additive components: a monetary compensation for the risk of death, a monetary compensation for time lost during recovery, and a monetary compensation for the risk of reduced quality of life. Using information from the labor market to estimate each component, we obtain a price of \$ 15,000 for a kidney. We show that the price of the kidney would not raise the total cost of transplants by more than 10% and would allow to increase the number of transplantations significantly. Furthermore, if the marginal donor is satisfied with helping the recipient, the price could be even lower.

As Adam Smith would explain, paid donors 'led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it'.

In a recent paper, Akbarpour et al (2021) provide novel data and information about the functioning of the only legal market for kidneys for transplantation in the world: the Iranian Market. In line with Becker and

Elias (2007) analysis, the paper shows that the Iranian system has performed very well, with much lower waiting times to receive a kidney than in most countries in the world. It shows how a paid living system can benefit patients in a deceased nonpaid donor waiting list, reducing their waiting time.

While the benefits of eliminating the shortage of organs and ending deaths on the waiting list are significant, the idea of paying organ donors has met with strong opposition, a practice prohibited by law in almost every country, except for Iran. Critics have claimed that paying for organs would be ineffective, that payment would be immoral because it involves the sale of body parts and that the main donors would be the desperate poor, who could come to regret their decision (see for example, Sandel, 2012).

Alvin Roth (2007) introduced the economic concept of “repugnance” to summarize this opposition. In a repugnant transaction the participants are willing to transact, but third parties disapprove and wish to prevent the transaction. “Repugnance” towards the way organs is procured operates as a real restriction to the development of the market. This has led economist to try to find ways to increase donations overcoming this restriction using market design and other tools of the economic analysis.

One question that arises from these concerns is about people's decision making and how voluntary the exchange is. In particular, whether the sale of the kidney is mainly due to desperation to receive money to meet an immediate need and, therefore, if a regret on the donor side is likely to occur after the donation.

According to Adam Smith, in the Theory of Moral Sentiments, when making decisions, a conflict is unleashed in the human being between passions and the impartial spectator:

‘The pleasure which we are to enjoy ten years hence, interests us so little in comparison with that which we may enjoy today, the passion which the first excites, is naturally so weak in comparison with that violent emotion which the second is apt to give occasion to, that the one could never be any balance to the other, unless it was supported by the sense of propriety...

The spectator does not feel the solicitations of our present appetites. To him the pleasure which we are to enjoy a week hence, or a year hence, is just as interesting as that which we are to enjoy this moment'. (TMS, 4.ii.8)

Under the type of system we proposed with Gary Becker (Becker and Elias, 2007, 2014), safeguards could be created against impulsive behavior. For example, to reduce the likelihood of rash donations, a period of three months or longer could be required before someone would be allowed to donate their kidneys or other organs. This would give donors a chance to re-evaluate their decisions, and they could change their minds at any time before the surgery. They could also receive guidance from counselors on the wisdom of these decisions.

However, we do not find any element that suggests that Adam Smith would have agreed with the imposition of limits on individual decision to make up for a possible lack of self-command, one of the four cardinal virtues. This virtue, according to Smith, develops during a person's life, 'Hardships, dangers, injuries, misfortunes, are the only masters under whom we can learn the exercise of this virtue (self-command). But these are all masters to whom nobody willingly puts himself to school'. (TMS, 3.iii.36)

A legal safeguard to avoid impulsive behavior would operate as the imposition of a minimum price for kidneys, and perhaps its design is not the one that best ensures the well-being of donors. Taking into account the high cost for the individual to develop this virtue and that its absence can cause problems for the proper functioning of the market, under a free market system in the sale of kidneys it is likely that these safeguards and their design will arise spontaneously by transplant programs to ensure better service to both parties, the donor and the recipient, as is the case under the current system.

As we discuss in the next section, Adam Smith recognizes the importance of benevolence and love, but, as Coase (1977) points out, for him it was impossible that these can be the base of the economic life of a modern society:

‘Nobody but a beggar chuses to depend chiefly upon the benevolence of his fellow-citizens. Even a beggar does not depend upon it entirely. The charity of well-disposed people, indeed, supplies him with the whole fund of his subsistence. But though this principle ultimately provides him with all the necessaries of life which he has occasion for, it neither does nor can provide him with them as he has occasion for them. The greater part of his occasional wants are supplied in the same manner as those of other people, by treaty, by barter, and by purchase’. (WN, 1, ii)

The free exchange in the market provides benefits way above of those that can be generated in an economy based on altruism, and people also weigh these benefits. Using a survey experiment, Elias et al (2019) shows that even though preferences for compensation to organ donors have strong moral foundations and many people find it repugnant, people is more willing to favor a paid donor system the largest the gains in terms of lives saved.

### **III. Adam Smith and Kidney Exchange<sup>4</sup>**

Kidney transplantation is considered the best treatment option for patients suffering from end stage renal disease (ESRD) (Abecassis M, Bartlett ST, Collins AJ, et al, 2008). The current systems of organ donation in most countries rely on altruism: the undirected generosity of people who express their will (or don’t expressly oppose, depending on the default rule for deceased organ donation) to donate their organs after they die, as well as the directed altruism of people who donate a kidney as a living donor to a loved one.

Adam Smith recognizes the importance of altruism, especially toward those close to us:

‘After himself, the members of his own family, those who usually live in the same house with him, his parents, his children, his brothers and sisters, are naturally the objects of his warmest affections. They are

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<sup>4</sup> This section is based on Castro and Elias, 2021b.

naturally and usually the persons upon whose happiness or misery his conduct must have the greatest influence. He is more habituated to sympathize with them: he knows better how every thing is likely to affect them, and his sympathy with them is more precise and determinate than it can be with the greater part of other people. It approaches nearer, in short, to what he feels for himself'. (TMS, 4.ii.1).

In 2019, 29% of kidney transplants in the US were performed with live altruistic donors, 50% of the organs being donated by family members. Unfortunately, a healthy person's kidney is often incompatible with the intended recipient. There would be more live-donor transplants if any altruistic live donors who wanted to help a loved one in need could do so.

Using tools from Market Design and introducing new developments, Nobel Laureate economist Alvin Roth has helped, and continues to help along with other economists in collaboration with medical professionals, in organizing a marketplace for Kidney Exchanges between internally incompatible patient donor pairs (Bradley et al, 2011). The simplest type of kidney exchange is between two incompatible patient donor pairs (see Figure 2). In more complex cases, additional patient donor pairs can be included generating more than 2 kidney transplants (see Figure 3).

In a chapter Of the Influence and Authority of Conscience, Adam Smith explains:

'In the same manner, to the selfish and original passions of human nature, the loss or gain of a very small interest of our own appears to be of vastly more importance, excites a much more passionate joy or sorrow, a much more ardent desire or aversion, than the greatest concern of another with whom we have no particular connection'. (TMS, 3.iii)

Kidney exchange creates a 'connection' between incompatible patient-donor pairs. It provides incentives to join the market and to be benevolent with an unknown patient by prosecuting the donors own interest, to benefit a loved one that will receive the kidney from the donor of another pair.

Adam Smith was aware that altruism is more important in families than in markets, in a famous passage he argues:

‘It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages’. (WN, 1,ii)

Therefore, the expansion (the “extent”) of the market, that promotes specialization with its benefits, does not require participants motivated by altruism and is facilitated by the use of money prices. A thicker marketplace also has substantial benefits for Kidney Exchange, both in increased number of feasible live donation transplants, and in improved match quality of transplanted kidneys (Roth et al, 2004).

Since its beginnings, the kidney exchange system has faced challenges to growth and benefits from its expansion (from its thickness). The first developments in that direction were the development of advanced matching algorithms that identify both simple exchanges and more complex chains of transplants to increase the number of transplants achieved and the establishment of Kidney Paired Donation Programs ((Bradley et al, 2011). A relatively more recent development to expand the extent of the market is Global Kidney Exchange, that allows for exchange between pairs of different countries (Rees et al, 2017).

Once a thick marketplace is achieved, exchange facilitators could have to deal with problems of congestion. In Book I Chapter IV of the Wealth of Nations (Of the Origin and Use of Money), Adam Smith explains how the ‘Difficulties of barter lead to the selection of one commodity as money’. These difficulties are present in Kidney Exchange since the use of money is not allowed by law. To ensure that both parts of the transaction go through, in a kidney exchange the surgeries are performed at the same time, which is not simple and limits the exchanges (there is a problem of congestion).

In response to this problem, doctors and donation administrators have developed chains that begin with a transplant using a non-directed donor, an altruistic person who wants to donate a kidney intended for a patient neither named nor specified. In the past, non-directed donors were directed to patients on the deceased-donor waiting list, generating one transplant. Kidney exchange has made it possible for a non-directed donor to help more than one patient, since a chain starts with a non-directed donor, includes some patient donor pairs from the Kidney Exchange program, and could end with a donation to someone on the waiting list (see Figure 4).

Recent work by Mohammad Akbarpour et al (2020), proposes an Unpaired Kidney Exchange system to eliminate the simultaneity problem (the double coincidence of wants) and reduce the congestion. They propose creating a market where a patient can receive a kidney, even if her donor is not compatible with the other pair's patient. When this happens, the system will 'remember' that the patient has the right to receive a kidney in the future and that the unpaired donor's kidney can be used for some other patient in the future. One concern with this system is that the unpaired donor may regret or cannot be able to donate later, a challenge that is also present in the chains. Using simulations, they find that the impact of donor reneging on the performance of Unpaired Kidney Exchange is likely to be low.

Currently, kidney exchange contributes to close to 17% of all live kidney transplants and its design continues to evolve. As Alvin Roth explains 'The constantly evolving design of kidney exchange is rather different than my experience with market designs involving medical labor markets, or school choice, or even the economics job market, in which design features have remained constant for years at a time' (Roth, 2017).

#### **IV. Adam Smith and Default Rules for Deceased Organ Donation<sup>5</sup>**

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<sup>5</sup> This section is based on Castro and Elias, 2021c.

Kidneys for transplantation can be recovered from living and deceased donors. In the previous section, we discussed the main developments of the Kidney Exchange System that has expanded the possibilities for kidney living donation. An important source of kidneys for transplantation comes from the undirected generosity of people who is willing to donate their organs after they die. In the U.S., kidney transplants with kidneys procured from deceased donors account for over 70% of the total.

An organ procurement system from deceased donors must establish a nonaction default rule, that is, a condition that is imposed when the will of a deceased potential donor is unknown. There are two main systems to determine whether the organs will be removed for transplantation or not when the will of the potential donor is unknown: Informed Consent (nobody is an organ donor without registering to be one) and Presumed Consent (people are organ donors unless they register not to be).

A system of informed consent, with a proactive choice to donate, is consistent with Adam Smith view that:

‘Nature, when she formed man for society, endowed him with an original desire to please, and an original aversion to offend his brethren. She taught him to feel pleasure in their favourable, and pain in their unfavourable regard. She rendered their approbation most flattering and most agreeable to him for its own sake; and their disapprobation most mortifying and most offensive.

But this desire of the approbation, and this aversion to the disapprobation of his brethren, would not alone have rendered him fit for that society for which he was made. Nature, accordingly, has endowed him, not only with a desire of being approved of, but with a desire of being what ought to be approved of; or of being what he himself approves of in other men. The first desire could only have made him wish to appear to be fit for society. The second was necessary in order to render him anxious to be really fit.’  
(TMS, 3.3)

The United States has an informed consent system, requiring consent for deceased donation, either by the individual having previously registered as an organ donor or by the deceased’s next of kin. According



to the 2019 National Survey of Organ Donation Attitudes and Practices, 90% of adults support organ donation but only 60% are actually signed up as donors. A major obstacle to increasing deceased donations is the need to get the consent of surviving family members when the will of the donor is unknown.

A policy that has been proposed to boost deceased organ donations is to shift the default rule for deceased organ donations from an Informed Consent to a Presumed Consent System. There is evidence that the choice of the default to determine whether a deceased individual is a donor in the case that her will is unknown could affect the decision of potential donors and their families. Eric Johnson and Dan Goldstein (2003) find that in countries that have a presumed consent system, very few people chose to opt out (see Figure 5).

There are different forms of presumed consent systems. The main difference across systems is whether the decision to donate or not is left to the family of the deceased. Under a strong presumed consent system, if the will of the deceased is unknown the organs can be removed without permission of the next of kin, while in a mild system the decision is left to the next of kin, like in the informed consent system.

About this implicit presumption of benevolence to remove the organs of a person that has 'sit still' on taking a decision and 'did nothing,' in a Section 'Of Justice and Beneficence' of the Theory of Moral Sentiments Adam Smith sustains that:

'The man who barely abstains from violating either the person or the estate, or the reputation, of his neighbours, has surely very little positive merit. He fulfils, however, all the rules of what is peculiarly called justice, and does every thing which his equals can with propriety force him to do, or which they can punish him for not doing. We may often fulfil all the rules of justice by sitting still and doing nothing'. (TMS, 2,ii,1)

In their book Nudge (2008), Thaler and Sunstein warn that to preserve individual freedom it is key to facilitate the opt-out mechanism: 'Under this policy, all citizens would be presumed to be consenting

donors, but they would have the opportunity to register their unwillingness to donate, and they could do so easily. We want to underline the word easily, because the harder it is to register your unwillingness to participate, the less libertarian the policy becomes’.

Another policy alternative is a ‘mandated choice’, where people is required to make a yes or no decision regarding donation (without giving an option to not answer or to postpone the decision), for example when they renew their driver license or when they vote. In a paper with the revealing title “Don’t Take ‘No’ for an Answer”, using experimental and observational data Judd Kessler and Alvin Roth (2014) find that switching from an opt-in to a ‘mandate choice’ frame do not increase registration rates and may even decrease them.

They also find that people are much more likely to add themselves than remove themselves from the donor registry, even though they had been asked previously about organ donor registration. This suggests the effectiveness of making a repeated appeal for organ donor registration and taking a ‘prompted choice’ approach as Thaler and Sunstein suggest again in their last edition of *Nudge: The Final Edition* (2021).

The ‘prompted choice’ approach appeals to the idea of exposing people (potential donors and their families) to the eye of the impartial spectator:

‘It is reason, principle, conscience, the inhabitant of the breast, the man within, the great judge and arbiter of our conduct. It is he who, whenever we are about to act so as to affect the happiness of others, calls to us, with a voice capable of astonishing the most presumptuous of our passions, that we are but one of the multitude, in no respect better than any other in it; and when we prefer ourselves so shamefully and so blindly to others, we become the proper objects of resentment, abhorrence, and execration. It is from him only that we learn the real littleness of ourselves, and of whatever relates to ourselves, and the natural misrepresentations of self-love can be corrected only by the eye of this impartial spectator. It is he who shows us the propriety of generosity and the deformity of injustice; the propriety of resigning the

greatest interests of our own, for the yet greater interests of others, and the deformity of doing the smallest injury to another, in order to obtain the greatest benefit to ourselves. It is not the love of our neighbour, it is not the love of mankind, which upon many occasions prompts us to the practice of those divine virtues. It is a stronger love, a more powerful affection, which generally takes place upon such occasions; the love of what is honourable and noble, of the grandeur, and dignity, and superiority of our own characters'. (TMS, 3.2)

## **V. Adam Smith and the Priority Rule<sup>6</sup>**

As we mentioned in the previous section, even though most adults support organ donation, only 60% are actually signed up as donors. While monetary incentives are forbidden by law, people may be motivated to register as a deceased donor for many reasons, including altruism, warm glow, reciprocity, social recognition, and social pressure. Economists have designed different systems to promote organ donation appealing to these different types of potential donors' motivations, without using money payments.

Adam Smith sustained that altruism is more important towards those close to us, like families and friends, and that 'Every man is, no doubt, by nature, first and principally recommended to his own care; and as he is fitter to take care of himself than of any other person, it is fit and right that it should be so' (TMS, 2,ii,2). Taking these into account, Smith found reciprocity as a mechanism that promotes benevolence towards others and supports cooperation:

'Of all the persons, however, whom nature points out for our peculiar beneficence, there are none to whom it seems more properly directed than to those whose beneficence we have ourselves already experienced. Nature, which formed men for that mutual kindness, so necessary for their happiness, renders every man the peculiar object of kindness, to the persons to whom he himself has been kind.

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<sup>6</sup> Based on Castro and Elias, forthcoming.

Though their gratitude should not always correspond to his beneficence, yet the sense of his merit, the sympathetic gratitude of the impartial spectator, will always correspond to it. The general indignation of other people, against the baseness of their ingratitude, will even, sometimes, increase the general sense of his merit. No benevolent man ever lost altogether the fruits of his benevolence. If he does not always gather them from the persons from whom he ought to have gathered them, he seldom fails to gather them, and with a tenfold increase, from other people. Kindness is the parent of kindness; and if to be beloved by our brethren be the great object of our ambition, the surest way of obtaining it is, by our conduct to show that we really love them'. (TMS,6,ii,1)

Under the U.S. organ allocation system, the priority to receive a kidney from a deceased donor is based on many different factors, including waiting time and the survival benefit from the transplant (starting in 2015)<sup>7</sup>. One way to incent registration is to promote reciprocity by giving highest priority on the organ donor waiting lists to those who previously registered as donors than non-registered donors.

Under this type of system, registered donors are rewarded by giving them priority on the waiting list and unregistered donors are penalized, providing incentives for people to register as an organ donor. Following Adam Smith, under the priority rule system, the reciprocity principle is fulfilled for both the positive and the negative:

'Actions of a beneficent tendency, which proceed from proper motives, seem alone to require a reward; because such alone are the approved objects of gratitude, or excite the sympathetic gratitude of the spectator.

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<sup>7</sup> <https://optn.transplant.hrsa.gov/patients/about-transplantation/how-organ-allocation-works/>

Actions of a hurtful tendency, which proceed from improper motives, seem alone to deserve punishment; because such alone are the approved objects of resentment, or excite the sympathetic resentment of the spectator'. (TMS, 2,ii,1)

Using a laboratory experiment, economists Jud Kessler and Alvin Roth (2012) find that 'an organ allocation policy giving priority on waiting lists to those who previously registered as donors has a significant positive impact on registration'. This kind of donor-priority system has been implemented in Singapore since 1987, in Israel since 2008, in Chile since 2013, and more recently in China since 2018.

Adam Smith didn't take reciprocity for granted and believed in the importance of incentives. Kessler and Roth (2014) identify and evaluate loopholes that may undermine donation in a priority system. A potential drawback of the system that they analyze, related to the public good nature of the donor pool, is free riding: people may wait until they needed an organ to register as a donor, or may register as donors to receive priority but instruct their next of kin, or other third party, to prevent their organs from being donated upon death, if the system allows it. To avoid the former is relatively simple, in Israel individuals only get priority three years after they join the registry.

Kessler and Roth (2014) analyze the latter type of freeriding and show that it could be a problem in Israel. Ultraorthodox religious groups in Israel are allowed to receive a kidney for transplantation from brain death donors, but they do not recognize brain death as a valid form of death and consequently oppose providing deceased donor organs, what breaks the criteria of reciprocity of Adam Smith. Negative reciprocity implies that somehow this must be fixed, if not the system may be adversely affected as Kessler and Roth (2014) shows using lab experiments. It is what the impartial spectator would indicate: 'As every man doth, so it shall be done to him, and retaliation seems to be the great law which is dictated to us by nature. Beneficence and generosity we think due to the generous and beneficent' (TMS, 2,ii,1).

Another drawback of the system is that people who are more likely to need an organ in the future have the highest incentives to register as a donor. This could create a reduction in the quality of the deceased organ supply. Li, Riyanto and Xiu (forthcoming) analyzes this problem and propose as a solution to impose a waiting time (a 'Freeze Period') during which donors are not given priority for a transplant until the waiting period expires. Using a model and an experiment they show that using a Freeze Period improves the quality of the organ supply.

There is an important implication of this public policy proposal: the adverse selection problem is solved by excluding from the system some of those that are more likely to need a transplant. As a consequence, part of the population may find the freeze-period remedy repugnant in an economic sense. As the authors notes, 'Like other settings with adverse selection, the solution may sometimes be harsh for one type of agents due to the underlying screening feature. In the organ donation case, this means that the high-risk agents who could have taken more advantage of the priority system may be more deprived of these benefits than the low-risk agents, since the freeze period is aimed to deter such an adverse selection problem. Hence, it involves a tradeoff between fairness and efficiency'. As we discussed earlier, Elias et al (2019) show that these gains in efficiency are also valued by people and could make the system more acceptable.

In 2008, Israel implemented a priority rule that not only grant priority to those who previously registered as organ donors themselves, but also to candidates on the waiting list who are first-degree relatives of deceased organ donors. Stoler et al (2016) evaluate the impact of this law and found that the authorization rate for deceased donation was substantially higher after people was aware of the new law and reached an all-time high rate of 60% in 2015.

## **VI. Conclusion**

In *The Why Axis* (2013), Uri Gneezy and John List explains that 'Until one understands what incentives motivate people, it is impossible to predict how policies will actually work'. Written more than 200 years, the work of Adam Smith provides great insight into the functioning of markets and to think and evaluate public policies. His views about human decisions struggling between 'passions' and the 'impartial spectator' and on the difficulties of organizing the economic life appealing mainly to benevolence, and other sentiments toward close ones, are illuminating for policy design by providing an understanding of what motivates people in the context of markets.

Adam Smith allows to understand the great benefits of allowing payment to donors and provide a base for understanding on how such a market would work. His celebrated theory of equilibrating differences (or compensating differentials) is a useful tool to estimate the compensation for kidney donors, estimated at about \$15,000 in the US by Becker and Elias (2007). His analysis of individual self-control serves as a base for a useful discussion on whether it is convenient to limit individual liberty by establishing, for example, a cooling off period before a person is allowed to sell a kidney.

The ban on organ payments in most countries has motivated economists to think in alternative ways to procure and distribute kidneys, including kidney exchange, priority rules, and different ways of soliciting organ from deceased donors. Adam Smith's ideas provide a rationale and a guide for the design of these policies, and at the same time show the difficulties of organizing markets without payments and the enormous challenges to increase the supply of kidneys in an effective way. As Adam Smith's analysis predicts, none of these policies has been able to eliminate the organ shortage.

We consider Adam Smith a philosopher of human behavior, an acute and cautious reader of all his movements and respectful of certain constitutive principles of his complex nature. And certainly, all the more complex, when he manages to interrelate with his peers, located at different degrees of sentimental proximity to him.

We hope we have shown with our analysis not only the topicality of Smith's ideas but the importance for the economic analysis of combining both the Theory of Moral Sentiments and the Wealth of Nations, and to not consider them separately as isolated masterpieces. This approach is not new, it is something that it is present in Gary Becker's vast work extending the economic approach to human behavior, integrating individual motivations and behavior into a market framework, where many different participants, most of them unknown to each other, interact.



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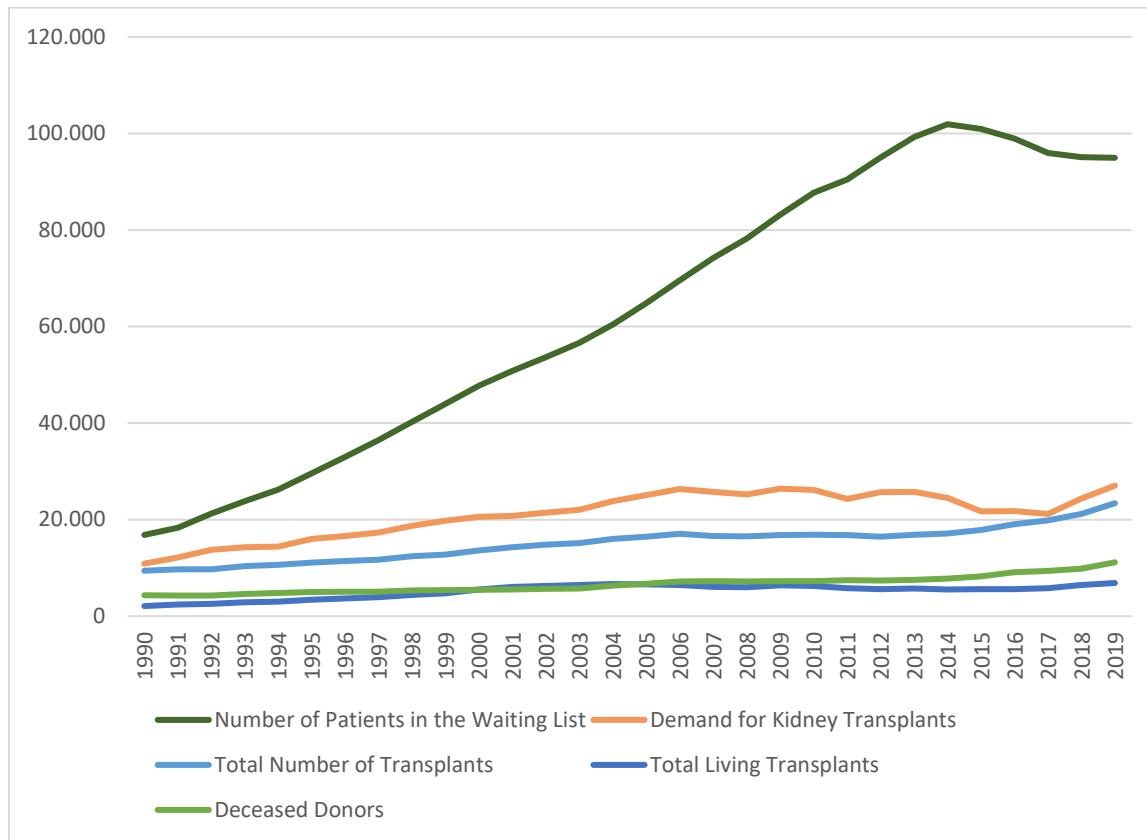
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## Figures

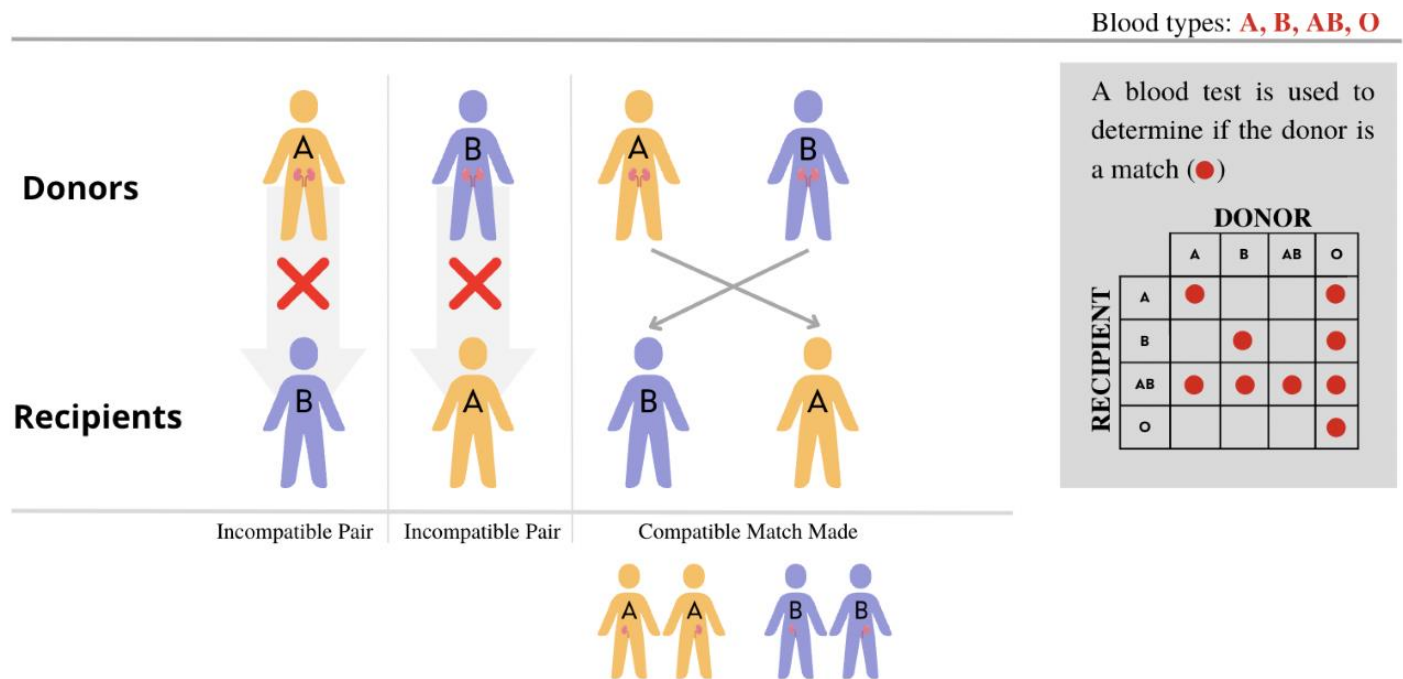
**Figure 1: Kidney Transplants: Waiting List, Demand, Deceased Donors, Number of Transplants and Living Transplants United States -1990-2019**



Source: Based on OPTN data as of January 1, 2020. Data subject to change based on future data submission or correction.

Note: Demand for Kidney Transplants is estimated as the total annual number of transplants plus the gap (annual growth in the waiting list plus annual number of deaths on the waiting list).

**Figure 2: Kidney Exchange between Two Incompatible Pairs (Simple Exchange)**

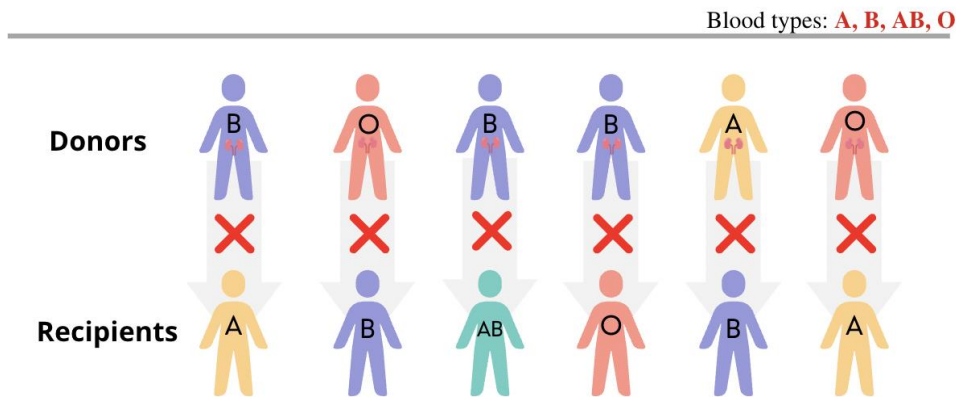


Source: Meckler, Laura. Kidney Swaps Seen as Way to Ease Donor Shortage. The Wall Street Journal. [Online] Oct. 15, 2007.

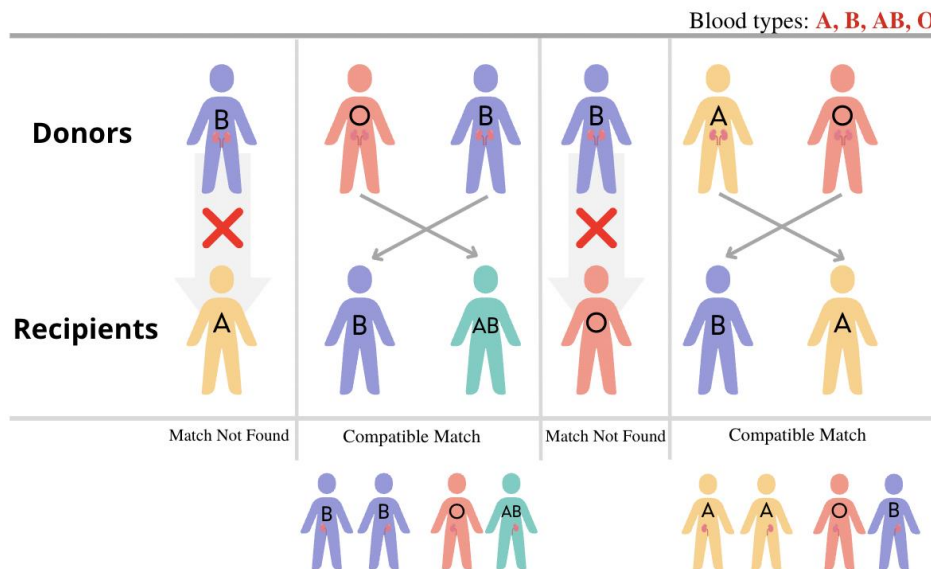
**Figure 3: Multiple Kidney Exchange**

‘In the same manner, to the selfish and original passions of human nature, the loss or gain of a very small interest of our own appears to be of vastly more importance, excites a much more passionate joy or sorrow, a much more ardent desire or aversion, than the greatest concern of another with whom we have no particular connection’. (TMS, 3.iii)

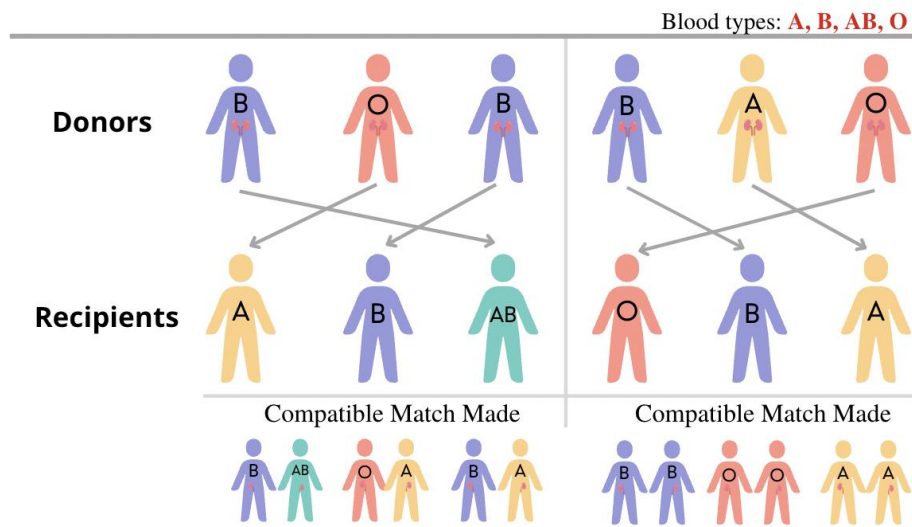
Kidney exchange creates a ‘connection’ between incompatible patient-donor pairs.



4 kidney transplants can be performed using simple exchange.



Instead of 4 kidney transplants, 6 transplants can be performed using advanced matching algorithms that identify both simple exchanges and more complex chains of transplants.

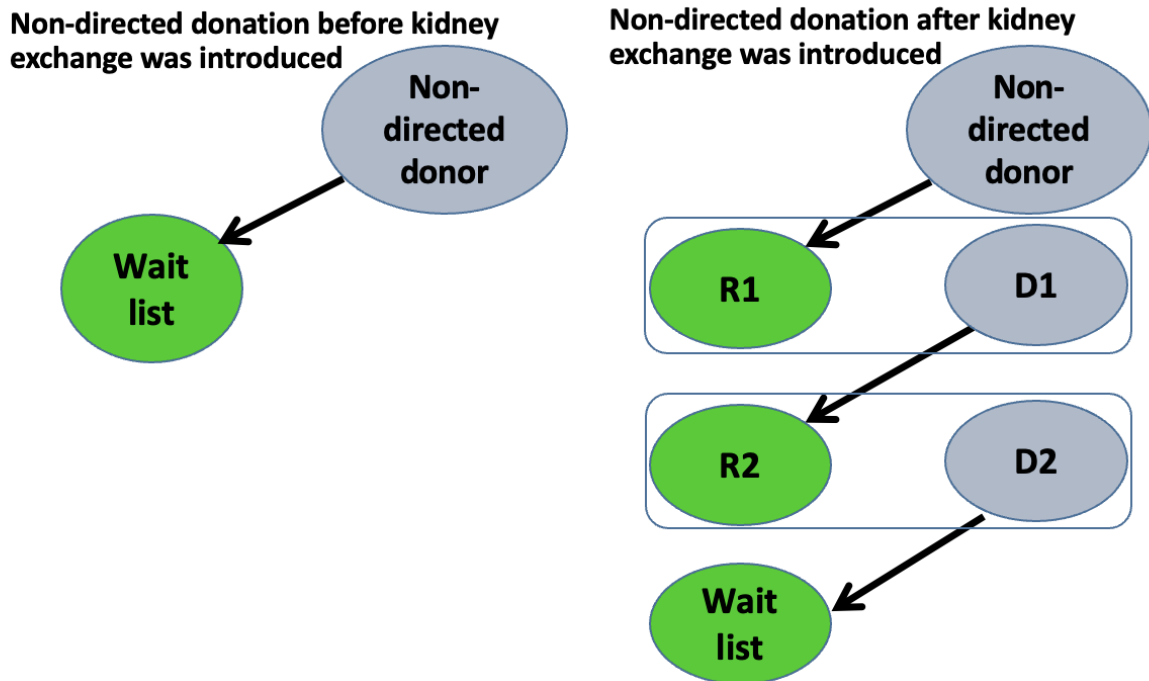


Source: Meckler, Laura. Kidney Swaps Seen as Way to Ease Donor Shortage. The Wall Street Journal. [Online] Oct. 15, 2007.

**Figure 4**

**Chains initiated by non-directed (altruistic) donors**

Once a thick marketplace is achieved, exchange facilitators could have to deal with problems of congestion. In Book I Chapter IV of the Wealth of Nations (Of the Origin and Use of Money), Adam Smith explains how the 'Difficulties of barter lead to the selection of one commodity as money'.



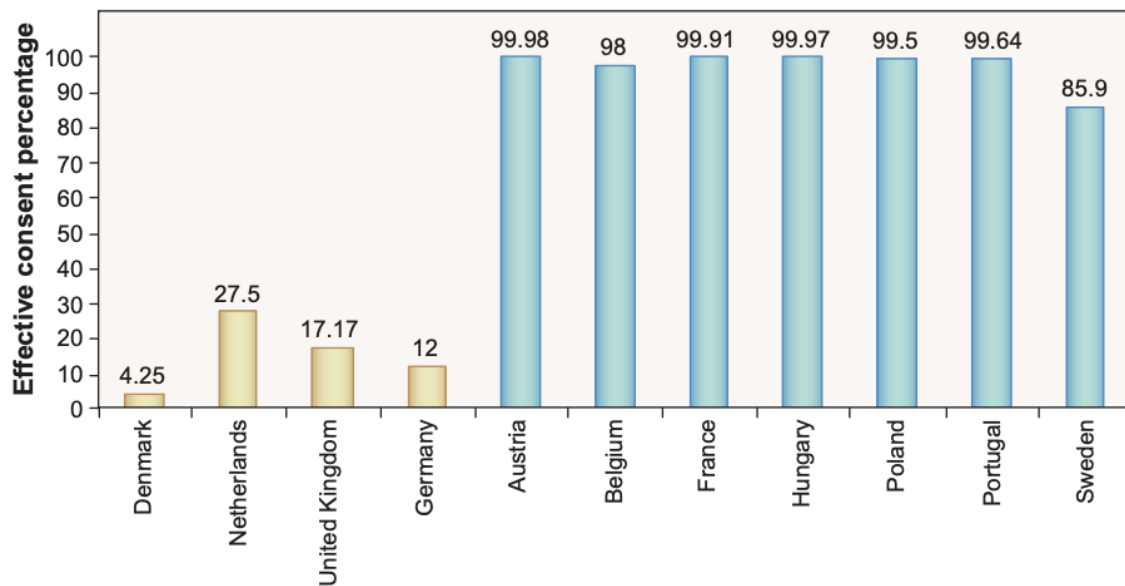
Source: Roth, Alvin. Who gets what and why. Presentation at Universidad del CEMA, Argentina, 2016.



**Figure 5**

**Effective Consent Rates, by Country**

About this implicit presumption of benevolence to remove the organs of a person that has 'sit still' on taking a decision and 'did nothing,' in a Section 'Of Justice and Beneficence' of the Theory of Moral Sentiments Adam Smith sustains that: 'We may often fulfil all the rules of justice by sitting still and doing nothing'.



**Effective consent rates, by country.** Explicit consent (opt-in, gold) and presumed consent (opt-out, blue).

Source: Johnson, Eric J. and Goldstein, Daniel G., Do Defaults Save Lives? (Nov 21, 2003). Science, Vol. 302, pp. 1338-1339, 2003.