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Quigley, Muireann

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Tax needn't be taxing, but in the case of organ donation it might be^a

Abstract

Petersen and Lippert-Rasmussen argue that, while a tax credit scheme to encourage organ donation would be costly, the increased number of organs for transplantation would lead to other savings in the healthcare system. In the present work some calculations are provided and it is suggested that, even given optimistic assumptions, the cost to the state of implementing the system as proposed would be high and unlikely to garner the support of politicians and policymakers.

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In their article Peterson and Lippert-Rasmussen present arguments in favour of giving a tax break to those who agree during their lifetimes to become organ donors following their deaths. The authors suggest that the scheme could work one of two ways. In the first, individuals would receive an annual tax credit for agreeing to donate their organs after death; and, in the second, they receive a one-off larger tax credit upon consenting to the scheme. There is much to recommend their proposal. If successful it would increase the numbers of organs available for transplantation and, thus, ameliorate suffering and save lives. While such a scheme might offer enough of an incentive to individuals to make their organs available, the level of tax credit suggested (£200/annum) is unlikely to affect those wholly against donation. Nonetheless, it might be enough to sway those who are either indifferent or who support donation yet have not taken active steps to sign up to the register. For this reason, the scheme would not fall foul of interference with autonomy type objections which might be deployed at certain incentive schemes. My concern with the scheme is of a pragmatic nature and is about the economic viability of a tax credit scheme. Their article argues that while such a scheme would be costly, the increased number of organs for transplantation would lead to other savings in the healthcare system (p. X).¹ I offer some initial calculations and suggest that, even given optimistic assumptions, the cost to the state of implementing the system as proposed would be unlikely to garner the support of the politicians and policy-makers.

There are a variety of factors which can affect whether or not an organ transplant is cost-effective. These include the type of organ being transplanted, how good of a match the organ is for the recipient, the disease group which the patient belongs to, whether the organ is from a living or deceased donor, and whether single or multiple organs are being

^a I would like to thank Brian Willis and Thomas Douglas for their comments on earlier drafts of this commentary.

transplanted (pp. 91-92).² Kidney transplants for end-stage renal failure have been shown to be cost-saving in comparison to dialysis treatment. Yet, while these may be less costly in comparison to medical management, this is not the case for other organs (p. 75).² The reason for this is that dialysis for renal failure is a much more expensive treatment than the non-transplant therapies for other organ-related dysfunction. There are, thus, savings to be made in moving patients off of dialysis via a kidney transplant, but similar savings may not be made in transplanting other organs. A report of the Organ Donation Taskforce (ODT) which looked at the economic case for organ transplantation suggested that, if the number of organs available for transplantation increases, so long as the numbers of kidneys increases as well the higher net costs for other organs would be offset (p. 75). However, none of the studies examined in the ODT report take into account any extra costs which might be associated with the introduction of a tax credit for donations. Let us, therefore, examine what impact this might have on costs. While I do not purport to present a comprehensive economic analysis here, a few simple calculations will give us an idea of the general feasibility of such a scheme.

In 2010/11 3,740 transplants took place in the United Kingdom (p. 5).³ Petersen and Lippert-Rasmussen surmise that the introduction of a tax credit might yield a 10% increase in the number of people joining the organ donation register and that this, in turn, could lead to a 10% increase in the numbers of organs available for transplantation (p. X).¹ For the sake of argument I am going to make some assumptions; this is to err on the side of generosity with regards to the calculations. First, I presume that all the extra transplants are kidney transplants. This is because, as noted above, transplanting dialysis patients can achieve savings that other transplants cannot. Secondly, I am assuming that the dialysis space made available because of the transplant is not simply filled by other patients (thereby negating any savings). Thirdly, I assume that all the extra patients transplanted were previously on dialysis and did not go straight onto the transplant list (otherwise each transplant would represent a net cost on the baseline of no treatment).

On average a kidney transplant could save £120,203/patient over 20 years in comparison to the cost of dialysis (table 1). The postulated 374 extra transplants (10%) generated by the tax credit scheme could save the NHS £44.9 million over 20 years. This equates to an average yearly saving of about £2.2 million (table 1); although this is not strictly linear since transplantation costs are initially high with savings being made over time in comparison to dialysis. It should be noted that studies underestimate the wider societal economic benefits of transplantation, such as employment, as these are hard to measure (p. 76).² In their paper the authors cite £300,000 worth of economic benefits per kidney transplant patient over 10 years (£600,000 over 20 years). Yet, it is difficult to interpret the exact meaning and relevance to transplantation of this figure. It is based on an estimation of yearly economic benefit of an average living donor kidney transplant given by Gaston et al. (p. 2550).⁴ However, this seems to misinterpret the data upon which they base their estimation. The original data from Murphy

and Topel were not about transplantation, but an estimation of the economic benefits of increased life-span due to health improvements.⁵⁸ The study noted that between 1970 and 1998 the life expectancy of men aged 50 increased from 21.8 to 26.6 years, a gain of 4.8 years. The gain for women in this period was 2.8 years. They then estimated that the economic value of these gains were \$350,000 and \$180,000 respectively per person (pp. s116-s117). Gaston *et al.* misinterpret this as being a 'per year' figure and subsequently derived what they deemed to be a 'conservative' estimate of the economic benefits of transplantation based on this. Whether or not this is in fact 'conservative' is questionable since the figure is far in excess of the average one which I have given. As such, I will refer to it as 'optimistic'. For our potential extra 374 patients the optimistic figure would represent a saving to the NHS of £224.4 million over 20 years and a yearly average saving of £11.2 million (table 1).

At the end of March 2011 there were approximately 17.8 million people on the donor register; a 10% increase due to the introduction of a tax credit system would yield 1.78 million extra people registered. If, as per the assumption in the article, those extra people were in the 50% tax band, the tax credits would cost the state £178 million/annum (table 2). Neither the average nor the optimistic figures for savings made by transplanting extra dialysis patients come close to offsetting the cost of the suggested annual tax credit scheme; indeed the scheme would involve a net cost to the state of £175.8m (average) or £166.8m (optimistic) net respectively per annum (table 2). Most people, however, do not pay 50% income tax and, as such, the figure derived from this represents a great overestimation of the cost to the state for the tax credits. Despite this, even if we re-calculate using the current lower tax rate (20%), we can see that, although the scheme costs substantially less, it would still be around £60-69m per annum (table 2).

Given the costs of an annual scheme, one-off tax credits, such as the authors propose, might be more attractive to the politicians and policy-makers. A one-off tax credit scheme would not incur the same repeated annual costs and so would represent a less expensive option. We can see from table 2 that, if the savings gained by the extra transplants were in line with the optimistic figures given by Petersen and Lippert-Rasmussen, the state would actually save money. However, there are some reasons to think that such savings would not be achieved. First, the optimistic figure is far in excess of the average savings suggested by other studies. Secondly, as noted earlier, the calculations presented here are based on savings to be gained in kidney transplantation. Kidney transplants represent approximately 70% rather than 100% of all transplants (p. 5).³ For this reason, any savings made by the state in a one-off tax credit scheme could well be wiped out, even if optimistic savings are achieved elsewhere because of the extra transplants. Further, it is likely that, contra my assumptions, (1) the dialysis spaces made available because of the transplant would be filled by other patients, negating any savings made by moving a transplant patient off of dialysis and (2) some patients would be transplanted who have never been on dialysis, thus creating a net cost rather

than saving. Lastly, I calculated the one-off tax credit figures at the level of £200, not a larger sum as suggested by the authors in their article.

One solution to this would be to set the amount of the tax credit at a lower level than the authors suggest so that the state would not carry significant extra costs by implementing the system. This, however, might affect the numbers of extra people who sign up to the register and, thus, the numbers of extra transplants gained. Of course, economic concerns need not defeat (ethically or practically) attempts to incentivise organ donation. We might think that the overall benefits, in terms of lives saved and improvements in quality of life, of having more organs to transplant outweigh any increase in costs in purely economic terms. However, whether or not the political will could be found to implement such a system without the economic case being made is questionable.

Table 1

	Average*		Optimistic†	
	Per patient	374 extra transplants	Per patient	374 extra transplants
Total savings of transplants over dialysis over 20 years	£ 0.12m*	£ 44.9m‡	£ 0.6m†	£ 224.4m‡
Annual savings of transplant over dialysis	£ 0.006m	£ 2.2m	£ 0.03m	£ 11.2m

* This rough figure is the average of savings cited in three studies^{6,7,8} which were used in the economic analysis done by the Organ Donation Taskforce.³ All other figures were worked out from this. The original table is available on p. 79 of the OTD Report.

‡ £0.12m savings/patient/20yrs x 374 extra transplants = £44.88m

† This figure which I have termed 'optimistic' is based on Petersen & Lippert-Rasmussen's assumptions. £0.3m of benefits over 10yrs = £0.6 over 20yrs

‡ £0.6m savings/patient/20yrs x 374 extra transplants = £224.4m

Table 2

Annual tax credit	Average		Optimistic	
	Annual cost	Annual net cost after savings	Annual cost	Annual net cost after savings
50% tax	£ 178.0m*	£ 175.8m‡	£ 178.0m	£ 166.8m
20% tax	£ 71.2m†	£ 69.0m	£ 71.2m	£ 60.0m
One off tax credit	Average		Optimistic	
	Cost over 20 yrs	Net cost after savings over 20 yrs	Cost over 20 yrs	Net cost after savings over 20 yrs

50% tax	£ 178.0m	£ 133.1m	£ 178.0m	£ -46.4m
20% tax	£ 71.2m	£ 26.3m	£ 71.2m	£ -153.2m

* $1.78\text{m} \times £200 \times 50\% = £178\text{m}$

† $1.78\text{m} \times £200 \times 20\% = £71.2\text{m}$

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