Case 1.5 How creating extra opportunities for trade can improve wellbeing: Kidney exchange and ICT

Summary

This case study uses the example of two-way exchange of kidneys between donors and transplant recipients to illustrate how expanding the scope for mutually beneficial trade will improve society’s wellbeing.

Suggested answers

1 Draw a diagram showing how the idea of three-way exchange would work. Can you think of any reason why it may be difficult to have exchanges that are larger than three-way?

An example of how a three-way exchange might work is shown below. Exchanges larger than three-way may be difficult to implement because of the requirement that all operations to remove the kidney from donors begin at the same time. With larger sets of exchanges it becomes more difficult to coordinate the operations, and having enough operating facilities (in the same geographic location) may be a problem.

Donor family 1

Donor family 2

Donor family 3

Recipient family 1

Recipient family 2

Recipient family 3

The value of having a three-way exchange arises where there is no pair of family groups (donor and recipient) who can make two-way exchanges, but where a three-way exchange is feasible. In the example above it could be that two-way exchanges are not possible because the donor from family 1 is incompatible with the recipient from family 3, the donor from family 2 is incompatible with the recipient from family 1, and the donor from family 3 is incompatible with the recipient from family 3 – but the specified pattern of three-way exchanges could still be compatible, and hence, by allowing three-way exchanges, it is possible to expand the set of mutually beneficial trades that can occur.

2 Do you think restrictions on legal trade in human organs are likely to completely limit such trade?

Government regulation bans trade and payments for organs. However, some members of society are willing to donate kidneys – that is, supply a kidney to a transplant recipient without payment – so that there will be some positive amount of supply at a zero price. The government regulation then means that supply is fixed at this level. The number of people who need a kidney transplant but do not receive one implies that the demand curve intersects the supply curve at the maximum level of supply. Because there is excess demand for kidneys at the zero price, it is necessary for governments to ration the available kidneys in some way; for example, by using waiting lists that assign priority depending on the amount of time spent waiting for a kidney transplant.

P

Excess demand

Number of kidney donations

Demand

Supply

Q kidneys

Due to the existence of excess demand there is likely to be an incentive for illegal trade. There are some people requiring kidney transplants, who are willing to pay for a transplant, but who do not receive a kidney transplant (at least not as rapidly as they would want). These individuals then may have an incentive to seek a kidney transplant outside the system of donations. Where they can find a donor who is willing to supply a kidney at a lower price than the benefit they will receive from the transplant, then there is scope for illegal trade to occur.

3 An article in The Economist(2013) has described how pre-paid mobile-airtime minutes are used as a de facto currency in Kenya – being able to be transferred between phones, exchanged for cash, or bartered for goods and services. The value of airtime minutes does not depend on a government's stability or ability to hold down inflation, and has the advantage of being able to be purchased and sent immediately and anonymously. Many telecoms firms in Africa transfer airtime minutes free of charge, and hence the mobile minutes are especially useful for settling small debts.

a In what ways can pre-paid mobile airtime be used in trade in Kenya?

In primitive economies we think of trade occurring by barter. Barter involves market participants trading goods or services. For example, where one participant produces milk and another produces corn, they could exchange some of their output with each other. The problem with barter is that it can only happen where each participant has something that the other participant wants. That is, the producer of milk has to want corn, and the producer of corn has to want milk. When that isn’t the case, then trade can’t happen in a barter economy.

This is where a medium of exchange such as money comes in. Where money is accepted as a store of value, then it can be used to pay for an item that someone wants to buy, and it does not matter if they do not have anything that the seller of the item wants. For example, suppose that the producer of milk would like some corn, but the producer of corn does not want any milk. With money, what can happen is that the producer of milk sells some milk to another market participant, who pays for that milk with money. The producer of milk then goes to the producer of corn, and uses the money to pay for the corn. Money ‘works’ so long as sellers who are offered it as payment for what they produce believe that they will be able subsequently to use it to buy items they want themselves.

From the description we can see that pre-paid mobile airtime minutes can be used as a medium of exchange in trade, just as in the description of the role of money above. The article states that pre-paid mobile airtime can be ‘transferred between phones, exchanged for cash, or bartered for goods and services’.

b Why might the mobile airtime be preferred to its available substitutes? In what way could the use of mobile airtime be argued to be increasing the gains from trade?

There are several reasons why mobile airtime might be preferred to other mediums of exchange:

• Other methods of transferring money between bank accounts have a greater degree of difficulty and higher opportunity cost.

• There is an increasing range of ways in which mobile airtime can be used as a payment (for example, the capacity to make international transfers).

• The value of pre-paid mobile airtime is more stable than money: if you accept money as payment for an item you sell, and if you are not going to spend that money immediately, then you want it to retain its value. This can be a problem with money in countries where there is a high rate of inflation. But it is not a problem with pre-paid mobile airtime because its value – a specified number of minutes of phone calls – remains constant.

• It is a better way of giving change than giving a specific good such as sweets (because the mobile airtime can be traded for other items, whereas the sweets cannot).

Mobile airtime can be regarded as increasing the extent of trade, and hence the gains from trade. There are two approaches to making this argument. First, any medium of exchange increases the capacity for potential buyers and potential sellers to trade, compared to being restricted to barter. Second, mobile airtime is expanding the availability of a medium of exchange for potential buyers and potential sellers. Some market participants who use it to trade, might not have been willing to trade if they had been required to use money (or to accept sweets as change).