

Chapter 4. Lucky Numbers – Nice Business

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*'The first law of economics: there is no such thing as a free lunch'.**

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4.1 An example of random distribution: Directory Enquiries numbers

This is an example of public assets being given away by a government agency through the mechanism of a 'ballot' – open lottery, with virtually nil entry cost, and the promise of a valuable prize to the winners of 'golden numbers'. Unlike the sporting lotteries in Chapter 2, those who stand to benefit are not individual citizens or consumers. In this case the winners are private businesses, who enter the ballot with the intention of running a profit-making directory enquiry service.

* Attributed to Milton Friedman.

Example: New 118 directory enquiry service: Lottery for numbers

‘Of tel is today allocating new telephone numbers to companies wanting to offer directory enquiry services to consumers. Over 80 companies have applied for the new six-digit numbers, which will mean that for the first time consumers will have a wide choice of directory enquiry services. Instead of being tied to the service provided by their existing telephone company, consumers will be able to choose from a variety of different directory enquiry services from a choice of companies. These could include specialist services in other languages or services that connect people directly to the number requested. Of tel initially expects to allocate about 300 different six-digit numbers, starting 118.

To ensure that all companies are treated fairly and have an equal chance of getting the most desirable numbers (eg 118118) Of tel is issuing the numbers by lottery. The first companies drawn at random will get their preferred choice of number.’

(Press release from: UK Telecoms regulator (Of tel) Date: 21 May 2002)

In a BBC2 ‘Money programme’, broadcast in May 2004, it was reported that in the lottery, a small company called Leaf Telecom, owned by Glyn Picton, drew first place. He chose 118 118, and immediately sold this ‘golden number’ to Chris Moss, owner of The Number Firm in Cardiff, for £2 million. The transaction was completed in one week. When asked ‘Did you ask enough for the number?’ Glyn Picton replied ‘Maybe not, but it was a pure windfall. I paid nothing for it, so it was all pure gain’.

4.2 Discussion on Directory Enquiries numbers lottery

Allocating directory enquiry telephone numbers whilst opening the market to competition can only be a one-off process. The method used – a lottery with negligible entry costs – could only be carried out once; it would be totally disruptive to lease numbers for such services, and re-call them at a later date for re-distribution. So, unlike previous examples of lottery distribution like university entrance in the Netherlands, there is no extended period of use to learn from. This one-off allocation was subjected to scrutiny by the National Audit Office, which published its Report in March 2005. I will be quoting from this Report—henceforth NAO(2005), because of its factual and authoritative nature, although I do not entirely agree with some of the conclusions it draws.

‘Of tel decided to encourage competition in the provision of directory enquiry services...in the *belief* that competitive markets benefited consumers.’(my italics). If a belief that ‘free’ markets provide consumers with a plentiful supply of good quality product at the lowest possible price, then the faith of Of tel has been gravely disappointed. As the NAO(2005) Report explains, consumers have ended up paying higher prices. They have been so confused by the process, that *fewer* customers are using directory enquiries than before. As to the quality of service, Of tel cannot comment: It failed to collect any service quality indicators about the previous BT monopoly service as a basis for comparison. The NAO(2005) Report comments charitably that ‘not all consumers have benefited from the move from 192 to 118 directory enquiry numbers, but that the market was still evolving.’

If the end result of this act of market liberalisation has been a somewhat qualified success, what of the process of allocating numbers to the new entrants? NAO(2005) comments ‘The actual liberalisation process was handled well by Of tel, following good regulatory practice.’ The fact that valuable numbers were given away through a lottery is explained as follows:

Of tel was fully aware that directory enquiries was a valuable business, worth £300 mn per annum in 2000. They were also required by the 2003 Telecommunications Act to

exploit opportunities for sharing in financial gain from the allocation of a scarce resource. This suggests an asset worth £10s of millions was at stake, with the potential sale price from ‘golden numbers’ such as 118 118 being well understood.

Oftel considered the possibility of charging for the numbers, including running an auction, to maximise revenue. However, having taken legal advice, Oftel felt that the 1984 Telecommunications Act only allowed administrative costs to be recovered, and that an auction might be illegal. They consulted the DTI (Department of Trade and Industry) who gave assurances that auction-permitting legislation could be made available at the earliest opportunity. (Such legislation was passed some 14 months after the 118 numbers were allocated).

Oftel decided that it could not wait and went ahead with the number lottery. There still remained several questions: Should entrants need to show that they were capable of running a directory enquiry service? Should entrants pay a bond of £100 or even £200,000 upfront? Should potential winners be required to set up and run a service? Would winners be allowed to trade their allocated numbers after the ballot was completed? In every case, Oftel decided to take the most liberal option: To avoid any charges of discrimination, and to encourage the maximum number of applicants, there were no entry charges, or any ‘arbitrary’ requirements to show seriousness of intent. There were some limits on how many numbers any one company or its affiliates could apply for, and BT was specifically excluded from the lottery and post-allocation trading.

In all, 88 companies entered the lottery, and 300 numbers were allocated. As the NAO (2005) Report puts it: ‘The existence of a golden number, low entry requirements, the use of a lottery and the ability to transfer numbers combined to create the conditions for a windfall gain for the company drawn out first in the lottery. There were few risks and a low level of financial commitment for new entrants, but potentially high returns. The low barriers to entry and potential rewards attracted an unexpectedly large number of companies to apply for a 118 number and approximately 100 numbers allocated in the lottery were subsequently not used to provide directory enquiries services. Our supplier survey and interviews also indicated that some

companies entered the lottery with the sole aim of acquiring the golden number. The low barriers to entry did, however, encourage many new entrants into the market.’

The justification for giving public assets to private profit-making companies for free is difficult to understand. Generally there is no justification for a lottery to be used when public goods are to be allocated to private, profit-making firms. The use of a lottery indicates an excess of demand over supply because of potential windfall profits. Perhaps Public Choice theory might explain that this is the administrators taking the easy way out (for them). Hiding behind a smokescreen of legislation is a standard trick to avoid taking uncomfortable action. Incentives for the administrators would also be lacking—whatever profits the sale of numbers brought would have no effect on their own salaries. Oftel may have been disingenuous when declaring that an auction could not be permitted.

Oftel’s use of a lottery to give away public assets to private firms is not unique: Boyce (1994) gives examples of oil-drilling leases and cellular telephone bandwidths being allocated by lottery in the US. Hazlett & Michaels (1993) looked at the US experience of handing out cellular (mobile) phone licences during the 1980s. They were able to calculate the amount of ‘rent-dissipation’ (give-away) based on the subsequent prices paid per licence. Airport landing slots have also been handed around amongst airlines in this way at La Guardia, New York, but only as a one-off measure to ease congestion, and prior to raising landing fees (Wald, 2001). The Oklahoma land rushes were rounded off in 1901 with a lottery for the final distribution of free land parcels (Bohanon & Coehlo, 1998). White-water rafting is so popular in Idaho that rationing is needed (Chouinard & Yoder, 2004). The customers are a mix of intrepid individuals, and commercial firms offering rafting holidays. A lottery for rafting permits is run annually, which might indicate that this mode of distribution is the most appropriate. The idea that everyone should have equal access to government-regulated resources ‘has been part of the recreation culture for at least the last century’ and that a lottery ‘minimises the perception that some receive preferential treatment or easier access than others’, according to Chouinard & Yoder (2004). This shows that it is the interests of the stakeholders—politicians, bureaucrats and a powerful rafting lobby that sustains this rent-dissipating example of lottery distribution of public assets to profit-making firms.

4.3 Design of Economic Mechanisms: Roth and Binmore

The idea of an economic mechanism is not new, but clarifying ideas about the *design* of economic mechanisms is a fairly recent idea. If, as should be fairly obvious by now, a lottery is *not* the best way to dispose of public assets to private firms, what is better? Simply saying ‘Use the market’ is insufficient, as the sorry saga of Directory Enquiries liberalisation shows. Economic mechanisms need to be considered more carefully, their effects calculated, and experience elsewhere drawn upon. A promising approach to this is Roth’s ideas on ‘Economic Design’ set out in his 2002 *Economica* paper ‘The economist as engineer: Game theory, experimentation, and computation as tools for design economics’.

Design economics, Roth suggests, is ‘intended to further the design and maintenance of markets and other economic institutions.’ Here Roth refers to ‘institutions’ in the economists’ sense of established ways of doing things. This meaning of ‘institutions’ can be confusing; ‘an economic mechanism’ would be better, and fits in with Roth’s ideas of economist-as-engineer. Thus a mechanism is any procedure to accomplish an economic transaction: This could be market-based, for money: for example, auctioning off radio-spectrum frequencies; or it could be intentionally outside the market such as allocating housing units to individuals—when, as in the case of social housing or students residences, cheap rents would be charged. My proposal for the use of random allocation as part of a process clearly encompasses the concept of an economic ‘mechanism’.

Roth extols the virtues of engineering design with reference to bridge-building. He describes the range of techniques which can also be applied to economic mechanisms. These are both analytical and experimental, and over time can be used to evolve better designs. The application to economic mechanisms is obvious, but it is clear that Roth sees engineering design as a *metaphor*, not a prescriptive framework for economists to follow. As someone who originally qualified as a mechanical engineer myself, before making the transition into economics, I am particularly attracted to the idea of the economist-as-engineer. However, Roth may have missed an opportunity by not

paying more attention to the well-developed field of engineering mechanism design. Authors such as French (1985) ‘Conceptual Design for Engineers’ or Pahl & Beltz (1988) ‘Engineering Design: A Systematic Approach’ could usefully be studied by economists. Later, in Chapter 9 I will suggest how a current engineering design technique—Kansei—could be used to improve university entrance procedures.

‘Much can be learned from history’ says Roth. He refers glowingly to the sociologist Jon Elster, who has published many influential books which discuss methods of allocation including lotteries. ‘Local justice: How institutions allocate scarce goods and necessary burdens’(1992) and ‘Solomonic choices: studies in the limitations of rationality’ (1989) are two of Elster’s most significant works relating to allocation outside the market.

A shining example of economic design comes from the UK auction of the 3G radio spectrum. Detailed information can be found in another NAO (2001) report, but the best description comes from the mechanism’s designer, Ken Binmore (Binmore & Klemperer, 2002). The mechanism used was described as a ‘simultaneous ascending auction’. The details are fairly complex, and had an important bearing on its success. These were the result of two strands of design investigated by Binmore and his team: They drew on detailed analysis of past disposals of radio spectrum, both successes and failures; and they conducted experiments with test subjects, specifically to try out their reaction to the actual rules of the simultaneous ascending auction.

Of course, as well as experience and experiment, Binmore was able to use economic theory to deal with some fallacious arguments: Many commentators felt that an enormous payment up-front would raise prices to consumers as firms tried to recoup their outlay. This is akin, says Binmore, to the mistaken argument that if house-builders are supplied with cheap (below market price) land, house prices would fall. Economists since Ricardo have realised that economic rent, or in this case, bids made in the 3G auction are sunk costs which do not affect market price. A royalty system might seem a better deal for 3G telephone users, but this as Binmore points out *would* increase prices for consumers, in a manner similar to a value-added tax.

In the case of the 3G auction, design economics was the key element in its success. The government took a long, careful look at the problem, and allowed sufficient time for the economic consultants to develop *and test* the appropriate mechanism. Subsequent auctions in other jurisdictions did not always fare so well, mainly, says Binmore, because conditions were different, or the government had other objectives in releasing the spectrum. Specific designs are required in each case—‘horses for courses’ as Binmore puts it—and off-the-peg solutions may not work. The lessons for anyone thinking of applying an element of random distribution to an allocation process are obvious.

4.4 Conclusion: How best to dispose of public property to private firms

The conclusion seems simple: That there are generally *no* circumstances where a lottery should be used to give away public property to private firms. So why were lotteries used to give away valuable telephone numbers, airport landing slots, some radio spectrum licences? The only explanation seems to be the Public Choice theory ones: That officials make life easy for themselves by holding a lottery; or that influential interest groups conjure up ‘difficulties’ to avoid an auction. We should not be too unsympathetic to these objections. As Binmore showed, designing the right auction mechanism is not straightforward, and takes time. Governments intent on imposing liberalisation in the shortest time possible may be tempted to take the lottery short-cut, with the acquiescence of their tame bureaucrats.

