

Subsidising Universal Broadband may Harm not Benefit Consumers

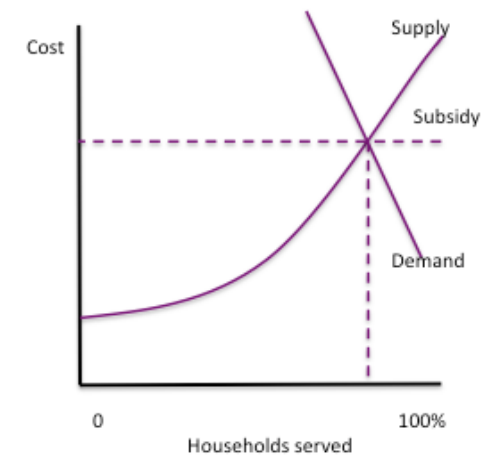
- **Universal broadband is a key policy objective for many countries**
- **One policy option is to subsidise broadband access to the most hard to reach households and businesses**
- **But could a subsidy actually harm the very consumers it is meant to benefit?**

The potential for a Universal Service Obligation (USO) to ensure all consumers can get access to broadband wherever they live is much on the mind of policy makers in Europe and elsewhere. The UK government, for example, launched a consultation paper on this subject in March 2016¹. One possible policy tool to help push broadband into rural areas is a subsidy to cover the additional costs of serving the most hard to reach households and businesses.

This edition of Hexagon examines the economic case for and against a subsidy in the event that an entrant could offer higher speed access in hard to reach areas, albeit at a greater cost.

The policy problem a universal broadband obligation would solve is that the cost of serving a proportion of households is greater than the price those consumers are willing to pay. This would not be a problem in normal markets, but social inclusion and positive externalities mean that the socially optimal number of broadband users is greater than the market would supply left to itself. There is,

therefore, a public interest in maximising the number of citizens that can access broadband services. One answer to pay for the gap between the marginal household (that household where the cost of supply equals the willingness to pay) and the final household is some form of subsidy: either paid for by the taxpayer or the rest of the industry (see figure below).



Such an approach is a simple and attractive solution. If people who have a cost of supply much less than the price they pay benefit from high cost consumers using broadband, that positive externality can be captured either through a USO surcharge or a small increase in tax.

However, an economic assessment of the case for a subsidy leads to ambiguous results. To determine whether a subsidy would be welfare enhancing really needs an empirical assessment of the demand and supply conditions.

To explain this thinking, it is necessary to use some simple economics. Suppose the government sets a universal broadband obligations of 10 Mbps, as has been suggested by the British Prime Minister, David Cameron, though most other countries with a broadband USO have set a lower access speed. Further, also suppose that the incumbent operator is designated as having the USO, as has been the case with a universal telephony service. To

provide access to households covered by the USO, the incumbent faces a cost (C). As this cost is above the price consumers are willing to pay it also receives a subsidy (S). The incumbent's price for the Universal Service broadband offer is, therefore, $P = C - S$. Under this arrangement all households could, if they chose, access broadband at a minimum speed and at an affordable price.

Let us now suppose that an entrant is able to offer a superior, i.e. faster, broadband service, using an alternative technology, to those same households, albeit at a higher cost (C*) and subsequently a higher price (P*). This superior service, let's say 100Mbps, is preferred by consumers provided that the price difference is not greater than the additional utility offered by 100 Mbps. The 10 Mbps service, which offers just what is needed for social inclusion, can be regarded as the anchor product. Consumers judge which product to buy based on the difference in price and benefits between the anchor product and the superior alternative.

Without the subsidy consumers would choose to buy the 100 Mbps service if the additional utility they obtained from it was greater than or equal to the difference in price, as illustrated in the equation below.

$$U_{100} - U_{10} \geq P_{100} - P_{10}$$

A proportion of consumers would be prepared to purchase the higher quality service at this price difference. If the number of consumer who would buy the superior service was large enough, then the entrant would find it economically viable to enter the market.

However, if the universal service price is subsidised then the anchor price is lower by S and consumers would only buy the 100 Mbps service if the difference in utility were greater than or equal to the difference between the unsubsidised 100 Mbps price and subsidised 10 Mbps price, as shown below.

$$U_{100} - U_{10} \geq P_{100} - (P_{10} - S)$$

The price difference is now larger, though the difference in utility remains the same. It can be expected that the proportion of consumers willing to buy the 100 Mbps service will now be smaller and, crucially, may be too small to make it economically attractive for the alternative provider to enter the market.



Since the universal broadband offer would have to be universal, i.e. apply to all households not just those in the final few percent, the dampening effect of a universal service anchor price may apply to the whole country, not just the most expensive to serve areas.

This analysis would suggest that a subsidy could be harmful to consumers if the alternative operator does not enter the market. However, if overall welfare is increased by all consumers accessing 10 Mbps, rather than some having 100 Mbps and some a lower speed, then the subsidy may be a welfare enhancing.

The answer can only really be known by a full analysis of demand conditions for different speeds of broadband and different prices. What is clear, however, is that subsidies are not necessarily the economically right answer.

A better alternative for government looking to extend broadband to all households and business would be to address supply-side issues. It should be accepted that there isn't a single technology that can deliver basic broadband, but that there are several options. The plethora of firms offering alternative broadband solutions including satellite, wireless and fibre is testament to the potential for entrepreneurs to ensure universality without a universal service obligation. It may be

better to address spectrum availability and non-economic regulations, such as planning rules, rather than introduce simple policies that may have unintended, and negative, consequences.

Once the market, free from potentially distorting policies, has served all the households and businesses it can, there may then be a space of a universal broadband obligation backed up perhaps with some form of subsidy. The provider of universal broadband need not then be the former incumbent, but could be one of the local entrepreneurs able to provide even better broadband than the minimum speed set by government. The universal broadband obligation could then be auctioned for lowest subsidy to any one of a number of different suppliers.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/510148/Broadband_Universal_Service_Obligation.pdf