THE UK BROADBAND USO:
A GREAT IDEA, BUT NOT SO EASY TO DELIVER

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RESPONSES TO OFCOM'S CALL FOR INPUTS HIGHLIGHT ALL THE CHALLENGES

Ofcom's call for inputs (CFI) on the proposed broadband universal service obligation (USO) identified six areas on which it sought stakeholders' inputs:

- Specification and scope of the USO

- Demand for the USO

- Cost, proportionality and efficiency of the USO

- The universal service provider or providers (USP(s))

- Funding of the USO and potential market distortions

- Review of the USO

The call elicited many responses, ranging from the major network operators to individual consumers. The breadth of the responses is an indication of the commercial significance for the industry but also shows how important broadband provision has become to consumers and to society more generally. The views expressed also give an indication of how challenging it will be to implement what is, on the face of it, a fairly straightforward policy objective: ensuring that all citizens of the UK have access to broadband, irrespective of where they live.

Some common themes feature in the responses to the call for inputs:

- A need to avoid distortion to the market at all levels. The USO and associated funding mechanisms should not adversely affect incentives to invest in network infrastructure, nor should they harm competition in the retail market.

- A need to build on the experience of Broadband Delivery UK (BDUK) and recognise the problems of running competitive mechanisms where there are realistically few bidders (or only one).

- The challenges of promoting broadband supply when demand is difficult to predict and likely to change rapidly as society's use of broadband evolves.

- A need to ensure that the cost of the USO is well defined and measured, particularly if other industry players or taxpayers are required to contribute to it.

- The requirement for transparency in the way in which subsidy funds are raised and spent.

In an attempt to avoid some of the pitfalls associated with previous attempts at USOs, we present high level principles for the design of the scheme and some alternative options.

INTERNATIONAL EXPERIENCE SHOWS THAT FEW COUNTRIES HAVE GOT IT RIGHT

The views expressed by stakeholders in response to the CFI have been informed by the UK and European experience of USOs and USO funding mechanisms. But the experience of USOs is global—many countries have attempted to put such schemes in place. Results have been mixed. But it is possible to draw some general lessons from the UK and international experience of USOs.

- *It is difficult to get this right.* USO/universal service funds (USFs) work well in only a few countries. In many countries, the USF levy represents a significant tax on the industry[1] and governments find it difficult to spend

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1 USFs in many countries are based around a sector levy that is typically around 0.5% to 2% of gross sector revenues. If such a levy was applied to the UK, it would result in a USF contribution in 2015 of £190 million to £750 million, based on a total industry revenue of £37.5 billion (Ofcom CMR, 2016).

the money that has been collected in a transparent way that delivers value for money. In many cases, USFs are not spent at all but are retained by central government.[2] Even in countries where USO funds have been spent, the process is typically bureaucratic, slow and expensive to administer. Decisions to adopt major structural reforms to the industry in countries such as Australia, New Zealand and Bahrain have been an attempt to achieve universal superfast fixed broadband coverage without relying on traditional USO mechanisms, partly reflecting frustration at the failure of these approaches to deliver policy objectives.

- *USO cost calculations are problematic.* Modelling of the net cost of the previous generation of USOs (focusing mainly on voice services) proved to be an analytically complex exercise, and it was difficult to find an answer capable of standing up to serious scrutiny. The challenges arise primarily because of the nature of the voice call market which creates economic interdependencies between groups of subscribers or geographical areas. The cost structure of networks in which a large proportion of the costs of networks are common to multiple services and/or subscribers, and the difficulty of valuing the intangible benefit of being a USO provider, also contribute to the analytical challenges inherent in USO net cost calculations.

  Calculation of the cost of a broadband USO may be analytically simpler because it is unlikely to require explicit modelling of the links between different parts of the network. But the geographical and technological heterogeneity of broadband network rollout in hard-to-reach areas of the country means that it will still be challenging to reach an accurate estimate of the cost of provision. The difficulty of estimating the intangible benefit of being the broadband USP remains.

  The BDUK experience has illustrated these issues. The costs of meeting the BDUK phase 1 and 2 targets[3] were significantly overestimated, although the adverse consequences of this have been mitigated to an extent by the claw-back mechanism contained in the contracts.

- *It can be hard to make competitive USO subsidy mechanisms work effectively.* The BDUK experience also illustrates an important constraint of USO schemes: without viable alternative suppliers, competitive subsidy mechanisms do not work well and result in outcomes that are unlikely to deliver value for money. Such mechanisms risk further entrenching the market position of incumbent operators, often at the expense of tax-payers or other industry players. The outcome of phase 1 and 2 of the BDUK process—in which BT was the only bidder—appears inevitable in retrospect, as its scale allows it to build networks at lower cost than many of its competitors.[4]

- *The UK broadband market is evolving very quickly.* USO schemes always lag behind both the supply and demand sides of the market. The result is that USO funds are frequently misdirected to either the wrong locations or wrong technologies. This results in poor value for money but also distorts investment incentives. Some operators are likely to hold up otherwise commercially viable network investment if they think there is a possibility of future subsidies. Conversely, operators are unlikely to bid for USO projects if they think there is a risk of commercial overbuild by the incumbent operator—a problem highlighted in some of the responses to Ofcom's call for inputs.[5]

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2 One well-known example of this is Brazil, where the Universal Service Fund was established in 2000 and is funded through a 1% tax on telecommunications companies' revenues. Ten years after its establishment, the OECD reported in 2011 that only BRL 10 million out of a total of BRL 756 million (1.3%) that had been collected by the fund had been spent on the USO. The rest remained with the National Treasury (OECD Economic Surveys: Brazil, 2011).

3 Phase 1 and 2 targets were to extend superfast broadband coverage to 90% and 95% of UK premises, respectively.

4 The Superfast (Rural) broadband Programme: update (NAO, 2015).

5 See, for example, Response to Ofcom's Call for Inputs: Designing the broadband universal service obligation, (Vodafone, 2016).

THE BROADBAND USO NEEDS TO BE CLEAR WHAT PROBLEM IT'S TRYING TO SOLVE

One possible conclusion to draw is that there is no clear solution to the challenges of designing an efficient and effective broadband USO. The industry was fortunate to have been spared this in previous fixed voice telephony and payphone USO decisions in the UK. The costs incurred by BT in providing the USO, as then defined, were largely sunk, and Ofcom conveniently concluded that the net benefit to BT was small. Neither Government nor other industry players were therefore required to contribute to BT's USO costs, so the decision did not prove to be particularly controversial.

This is unlikely to be true for the broadband USO. A significant amount of work will therefore be needed by Ofcom and the Government if they are to overcome the well-founded concerns expressed in many of the responses to its CFI.

Key principles that would help avoid some of the pitfalls of other USO schemes include:

- *Clarity over the underlying rationale for the broadband USO.* The Government explains the lack of fast broadband coverage beyond 75% of the population as a "market failure"[6], but it is not obvious that fixed broadband provision in the UK is, in fact, subject to market failure. If the costs of provision are greater than customers' willingness to pay in certain areas of the country, the reluctance of the industry to invest in those areas may be an indication of a well-functioning market rather than a market failure.

  Having said that, two types of market failure in the provision of fixed broadband are possible, at least in principle. First, it is possible that there is a problem of imperfect information about willingness to pay for broadband which is not possible to overcome through customer contracts or other market mechanisms. This may result in a situation where the aggregate willingness to pay for broadband is, in fact, greater than the costs of supply but the market is failing to meet this demand because of the cost of overcoming the information problem. This issue exists in both urban and rural areas, and market mechanisms are evolving to address it (e.g., mechanisms for people to express an interest in broadband provision, better quality of data on customer demand). However, the higher average cost of provision in rural areas means that these mechanisms may not result in network provision, even in areas where it would be a net benefit to do so.

  Second, there are potentially network externalities in the broadband market resulting in suboptimal provision of broadband connectivity. A simple example would be Government being likely to place value on having rural populations connected to broadband because it would reduce the cost of delivering some types of public service—a value that may not be reflected in customers' willingness to pay to be connected.

  Again, the market is developing mechanisms for capturing value of upstream users of broadband networks which internalise some of these potential network externalities, albeit policy decisions, such as net neutrality regulation, can make it difficult to capture such externalities.

  More credibly, the real policy rationale for the broadband USO is a concern for equity. As society and the economy become increasingly dependent on access to fast broadband, citizens who are unable to access it are placed at ever greater disadvantage.[7]

  Correctly identifying the underlying problem to be addressed by the USO mechanism is relevant, because as with all regulatory interventions the USO mechanism should be designed to target—as specifically as possible—the policy or regulatory issue which has been identified. Failure to do this typically results in greater distortions to the market and an inefficient use of industry or public money.

6 A New Broadband Universal Service Obligation Consultation (Department for Culture, Media and Sport, DCMS, 2016).

7 In this context, broadband is sometimes referred to as a "merit good"; in other words, an essential service.

- *Targeting the wholesale level of the market.* The broadband USO mechanism should aim to avoid distortion of the retail market which has low barriers to entry and is effectively competitive. To achieve this, the USO should be applied at the wholesale level. This was an important principle in BDUK and implemented via BT's wholesale obligations in phase 1 and 2.

  It has also been applied in the BDUK phase 3 pilot projects, although experience indicates that it does create difficulties when there are a range of different small wholesale providers in USO areas.[8] It is possible that these would ease over time as the retail market develops.

  Targeting the USO at the wholesale level addresses the issue of distortion of the retail market but does not necessarily tackle distortion of the market at the wholesale level, particularly around network investment incentives. This needs to be dealt with through other aspects of the USO mechanism design.

- *Clarity around technological neutrality.* There should be clarity about the issue of technology neutrality in the context of rapidly evolving broadband performance in the UK and other European countries. On one hand, the current specification of 10Mbit/s is probably sufficient to deal with distributional concerns about availability and broadband quality in the short term. On the other hand, it will be inadequate even over the medium term as the rest of the country migrates rapidly towards common performance benchmarks of 100 to 200Mbit/s—and possibly more—in the future.

  There is already 100% satellite broadband coverage in place and the rollout of the 4G networks will deliver 98% population coverage by 2017. The implied rationale for a broadband USO is therefore that there is some fundamental limitation on these products in the form of either their technical performance or their price. Dependence on them in some areas of the country, or by some groups of customers, would therefore constitute a significantly inequitable result.

  The requirements of the USP should therefore be clearly specified in a way which delivers the desired broadband performance now and allows for improvement in the future as broadband in the rest of the country also evolves. This will necessarily result in the exclusion of some forms of broadband network technology—a decision which is likely to be unpopular with some stakeholders. However, it is something that would be better addressed explicitly in this process, rather than revisiting it in five years' time when customers in USO areas are locked into an inherently limited network technology.

- *Capex/opex mix.* Ideally, subsidies should be targeted at capital investment with a view to the networks being financially sustainable on an operating cost basis. This would avoid the requirement for ongoing subsidies to support provision in rural areas. However, one feature of terrestrial networks in rural areas is that they have both high operating costs and high fixed costs. This has implications for the financial viability of terrestrial networks and the likely appetite of parties to bid for the USO projects. It also has implications for the timeframe over which the USO funding mechanism is required to operate. If, indeed, broadband provision in these areas is not financially sustainable, even on an operating cost basis, then subsidies will be required indefinitely to sustain provision in the specified areas. This is not an appealing prospect for either policymakers or the industry.

- *Transparency over the entire process is key to long-term sustainability.* The mechanism should avoid the situation where one party implements the obligation while the other parties only contribute funds. This creates problems within the industry and complaints of unfair treatment—a point made about BDUK by many industry players. Rather, set up a mechanism through which other licensed operators (OLOs) make financial contributions to the USF but are also involved in its implementation, either as partners in the network infrastructure development itself (e.g., through co-investment or a pay-or-play mechanism) or some form of stakeholder participation.

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8 Emerging Findings from the BDUK Market Test Pilots (DCMS, February 2016).

- *Demand- vs. supply-side approach.* USO mechanisms have traditionally targeted the supply side of broadband provision through either license obligations or minimum-subsidy auctions. This is the case for the existing USO system in the UK which is implemented through obligations on BT and KCOM to supply services.[9]

A demand-side approach could potentially address some of the concerns identified above and in the responses to the call for inputs. They can be targeted at particular geographical areas or customer groups and therefore avoid indirectly subsidising non-beneficiaries. A demand-side subsidy scheme which was channelled by end users (e.g., through villages or parish councils) could also be designed to address the coordination and hold-up problem that is seen where customers are unwilling to commit to paying for broadband up front but would be willing to pay for it if it was available. Conditions attached to the subsidies could ensure funds are targeted at the wholesale level and at technologies which are future-proof. Finally, it would also be less likely to end up channelling subsidies to BT in the way that BDUK has done and would therefore avoid some of the difficulties of that scheme.

The disadvantage of such a scheme is the administrative burden that goes with it: dealing with many small communities is more difficult (and costly) than dealing with a small number of national operators from the centre. However, this could ultimately prove to be value for money if it overcame some of the problems seen in other mechanisms.

THERE ARE TWO MAIN OPTIONS FOR DESIGNING THE USO

Very broadly, two types of mechanism could be applied to the broadband USO in the UK: one supply-side focused and the other demand-side focused. In both cases, the way in which the obligation is defined and applied is separate from the way in which it is funded.

Supply-side approach

The simplest way to achieve this would be to model the broadband USO on the existing voice USO. This would involve requiring BT to extend its FTTC programme to 100% of its exchanges and cabinets. In the simplest application of this approach, the additional costs of this network extension could be recovered through the wholesale price controls, leaving BT no worse off financially than is currently the case.

However, the challenge with this is the cherry-picking problem whereby, as regulated wholesale prices are allowed to rise, BT will lose market share to wholesale competitors, making the arrangement financially unsustainable. In such a case, regulated revenues would not be able to cover the full cost of service provision and some form of external financing would be required. The extent to which this is a problem in practice is an empirical question, albeit a difficult one to answer accurately.

This approach has merits. It is administratively relatively straightforward, as there would be a limited number of parties involved. It would also mean that the 5% of premises in the USO areas[10] would receive a similar broadband service to the rest of the country and at similar prices.

On the other hand, it would result in further entrenching BT's position in the wholesale market and would rely on its current technology choices. Further, it does not avoid the need for a detailed net-cost analysis with all of the problems outlined above.

Demand-side approach

This would target the USO mechanism on the customers in USO areas by increasing their ability to pay for broadband. It could be done through a variant of a voucher scheme in which a subsidy is given to customers or groups of customers (e.g., villages or local councils) and the market responds through a competitive process. The funding could be made conditional on the

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9 There are some exemptions through, for example, the EU funding for community broadband projects.

10 We assume that it is 5% for the purposes of illustration. The actual number would depend on the outcome of an updated analysis of the economics of FTTC in rural areas.

suppliers offering certain technical specifications (e.g., speeds, wholesale provision) and could include a collective decision-making mechanism to ease the information problem.

The advantage of such a mechanism is that it is likely to be less distortionary and would be less likely to be dependent on BT. However, it would definitely require external funding and is likely to be expensive to administer.

OFCOM MUST RISE TO THE CHALLENGE

The policy objective—ensuring that everyone in the country has access to fast broadband—is straightforward to articulate but is likely to prove difficult to achieve. There are few parallels for similar policy challenges. Universal coverage of the other networks (e.g., electricity, water and voice telephone) has usually been achieved during periods when the providers were monopolies and were therefore able to cross-subsidise between groups of customers in order to ensure the financial sustainability of the network as a whole. This model of urban-rural cross subsidisation continues today in the UK, post privatisation, through the retention of the geographical monopoly model.

The liberalised and competitive nature of the modern telecoms market, combined with dramatic differences in the economics of supply in rural versus urban areas, mean that without some form of regulatory intervention it is highly unlikely that the industry would deliver uniform coverage of broadband services to 100% of the population.

Achieving this objective in a way that is cost effective and has the minimum distortion to the market will be difficult. There is a lot of experience from the UK and further afield about what does not work. There are fewer examples of broadband USOs that can be considered to be an unqualified success. Significant challenges therefore lie ahead for Ofcom and DCMS in getting the UK scheme up and running in a way that does not harm investment and competition while also delivering value for money to subscribers and taxpayers.

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Mark Williams is an economist with 20 years of experience in the economics, regulation and strategy of the telecoms, media and technology (TMT) sector. This has covered a range of specialist areas including regulation, litigation, cost modelling, spectrum, restructuring, financial analysis and business strategy.

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