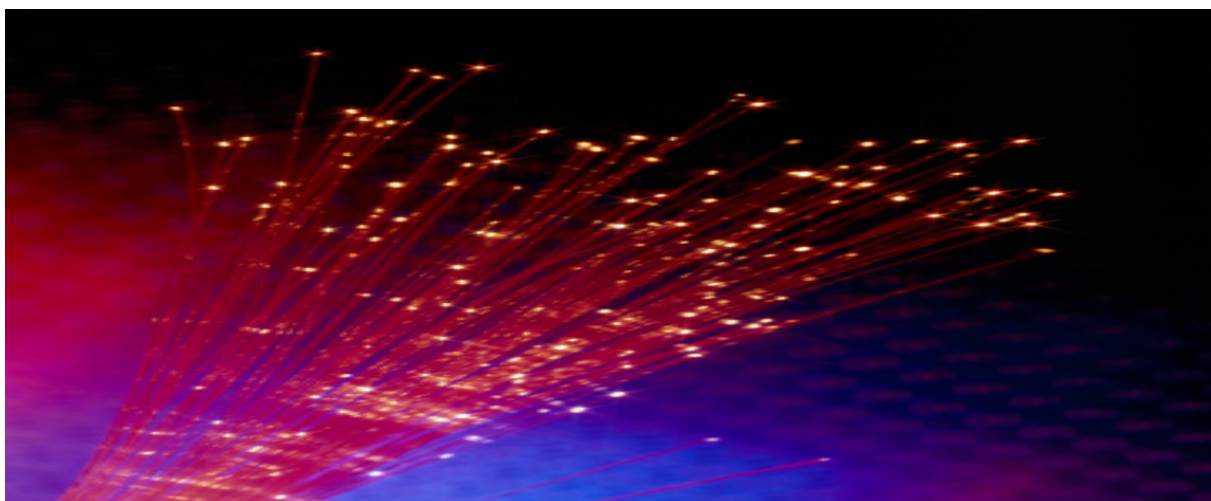


by Richard Cadman

Next generation access

Analyzing regulation and the product life cycle



The politicians have set their ambitious target. The European Commission wants to see all households in Europe having access to 30Mbps broadband by 2020 and 50% of Internet users subscribing to 100Mbps by the same time¹. Now all that's needed is for the private sector to invest in, and build, the high speed, Next Generation Access (NGA) networks required to meet the goal.

Job done? Not really. Nobody seems to know how to ensure industry has the right incentives to invest while the retail market remains competitive. There is an underlying assumption amongst many that an economic bottleneck will exist in the fibre world just as it does in copper and that therefore access regulation will remain a necessity. The rules that govern copper access – non-discrimination, cost orientation and the like – will be just as necessary in next generation access as they are in current generation access. These rules will need to be set in advance of any investment so that investors in NGA cannot re-establish the monopoly the industry and policy makers have fought so hard to break over the past fifteen or

so years. This view is not universally held. Some incumbent operators argue for regulatory holidays in which they are allowed to develop fibre networks free from regulatory rules obliging them to provide access to third parties.

The two camps could be characterised as those who want to correct market failures even before the market is established, and those who want to allow the market to fail so that the market can be established. The first group see the continuation of current generation regulation as necessary to protect competition; the second see such regulation as damaging to investment. What's needed is next generation regulation to support next generation access.

Why do investors invest?

Let us start with a basic question: what do investors want when they risk their capital in a new project? The answer is obvious but necessary to restate: they want to earn a profit. That means they want a return on that investment greater than it costs them to raise the money or greater than the opportunity cost of the capital. It is this incentive that makes them, in some cases, risk all in entrepreneurial endeavour.

¹ European Commission (2010) 'Europe 2020: A European strategy for smart, sustainable and inclusive growth' COM(2010) 2020, 3rd March 2010

To earn that extra profit, however, requires a firm to operate in an imperfect market where it can gain some degree of market power. A perfectly competitive market leads to the complete erosion of market power such that firms can earn no more than their cost of capital. The firm must have at least an expectation of some market power, if only for a temporary period during which it can earn extra profits, to incentivise it to invest.

Those extra profits can come from two sources. The firm's investment might allow it to offer the existing set of products and services with a lower cost base. It can then set a price equal to the market price, whilst earning an extra return from its greater efficiency. In this case these efficiency savings are not passed on to the consumer, at least while it is the most efficient firm. These returns from greater productive efficiency are known as Ricardian rents.

Alternatively, the firm may make extra profits from being more innovative than its rivals and offering a new suite of products and services. There are many, many examples of firms who gain market leadership through innovation: Apple and Dyson to name just two. These extra profits from innovation are known as Schumpeterian rents. Schumpeterian rents may be indistinguishable from monopoly rents until competition forces the innovating firm to expand output beyond the monopolist level.

What do consumers want?

Consumers, according to classic economic theory are self interested. They are not interested in abstract concepts such as competition, they just want to be able to buy a product that meets their needs at a reasonable price. Competition is necessary to ensure that the wide diversity of consumer wants are met and to drive down prices, but competition, for the consumer, is a means to an end not an end in itself.

But there is a paradox. The more a consumer believes that a market is competitive, the less likely they are to be active in the market². Suppose a consumer believes that she can get a better price by shopping around, this will spur her to search for a better bargain and result in her being better informed. The more such active consumers there are, the more suppliers will have to work hard to meet their needs.

However, suppose our consumer believes that the market is highly competitive and there is no need to shop around as all suppliers offer the same price and product quality. Paradoxically, this leads to less informed consumers and can lead to a less competitive market place. Active consumers therefore play a vital role in ensuring a competitive market. Paradoxically, therefore, some belief amongst consumers that a better deal can be found elsewhere can lead to better consumer outcomes than if there is no such belief because the market is already very competitive.

What do policy makers want?

Policy makers want efficient investment in Next Generation Access and competition leading to lower prices and higher quality for consumers. Policy makers argue that NGA is necessary for economic competitiveness and development and so, in Europe at least, is essential for leading countries out of recession and slow economic growth, especially as the large Asian economies grow at a rate Europe can only dream of. Benchmarking Europe's NGA progress against its own past is not enough: benchmarking progress against the rest of the world is essential.

The question is, can the twin policy goals of investment and competition be met? Or should countries sacrifice competition, if only in the short term, to spur investment?

Let us begin to answer these questions by looking back.

Current generation regulation

Current generation regulation was designed to introduce competition into a market where a single firm dominated and was introduced when the market (then mostly voice telephony) was at the mature phase of the Product Life Cycle (PLC), but without the normal characteristics of a mature market. In a normal market the mature phase is characterised by some consolidation of competition and prices set near or at marginal cost. Consumers are knowledgeable about the product, competition has settled down, and prices are at or near the competitive level. However, telecoms was a monopoly with prices above the efficient level and output therefore restricted.

Current generation regulation was designed to both mimic and introduce competition in mature monopoly markets. Price regulation, largely retail price caps, was an essential tool, placing external

² Waterson, M. (2003) The Role of Consumers in Competition and Competition Policy International Journal of Industrial Organization No. 21 (2003) pp129–150

pressure on the former monopolist to reduce consumer prices, thereby expanding output, and to drive out inefficiency. Regulation also facilitated market entry by ensuring access to existing infrastructure and later encouraged entrants to climb the “ladder of investment”.

It is worth pausing here to remind ourselves how price caps work and why price caps based on RPI-X were successful. Monopolies have no competitors snapping at their heels, forcing the monopolist to lower its costs and prices. They therefore tend to produce products at a cost above that of an efficient firm: a gap known as X-inefficiency. Price caps worked by taking control of prices away from the monopolist and forcing it to reduce prices over a period of, normally, four to five years. The regulated firm, however, had the incentive to lower costs early in the price cap period and earn the equivalent of Ricardian rents by being more efficient than the price cap.

So long as there is some degree of inefficiency, price caps are an effective regulatory tool, which both reduce inefficiency and expand consumption. However, inefficiency implies legacy, which almost by definition cannot be the case with NGA – the next generation can hardly start as inefficient.

The second current generation regulatory tool for price setting is cost orientation for wholesale products. Regardless of the methodology (LRIC, FAC³, etc.), cost orientation implies some regulatory assumption of the cost of capital and therefore the maximum the investing firm can earn. This requires the regulator to price risk by setting the Weighted Average Cost of Capital (WACC). The regulator’s ability to do so must surely be questionable: pricing risk isn’t their forte and they might well be prone to pressure to set the WACC low so as to lower wholesale charges and hence retail prices, but harming investment.

Any investor will have a portfolio of investments with different expected returns following some form of distribution curve. Provided that the average return from the investments is equal to or greater than the average cost of capital across the portfolio the investor will be happy. The problem with a cost orientation regime is that it can set an upside limit to the return on regulated products, without compensating on

the downside. The average return is therefore shifted to the left and can discourage the investor from investing⁴.

But, if regulators removed regulation from firms with significant market power in the access network, then there is risk that those firms will re-monopolise the market which would almost certainly result in higher prices and less choice for consumers, and lower levels of consumption of NGA.

Next generation regulation

How then to regulate to encourage investment at the efficient, not monopoly, level of output? Some have argued that to encourage investment in risky activities, the interests of investors should dominate. Regulatory “holidays” or exemption from access rules for fibre access networks should allow those who invest to earn high profits. Without such an incentive, the investment won’t take place.

The USA provides an example where such an approach has been taken since the lifting of the obligation to provide Unbundled Network Elements (UNE) after the Federal Communications Commission (FCC) declared in May 2005 that broadband access is an information service rather than common carriage. Since then, supporters of the policy claim that many billions of dollars have been invested in fibre network bringing higher speed broadband to US residents. However, the FCC’s recent change of policy direction may suggest regulatory holidays were not as successful as claimed⁵. Supporters of regulatory holidays could also look outside the telecoms sector. The pharmaceutical industry has inbuilt mechanisms to encourage investment in new drugs through long patent periods which protect the investor from competition from generic drugs for up to twenty years.

At the other extreme are people who argue that NGA should be subject to the same regulatory conditions as current generation access as there is no break in the chain of substitution and so under the European ex ante regulatory process, NGA is susceptible to ex ante regulation according to the “three criteria test” and there is probably at least one firm with Significant Market Power (SMP) on the relevant market.

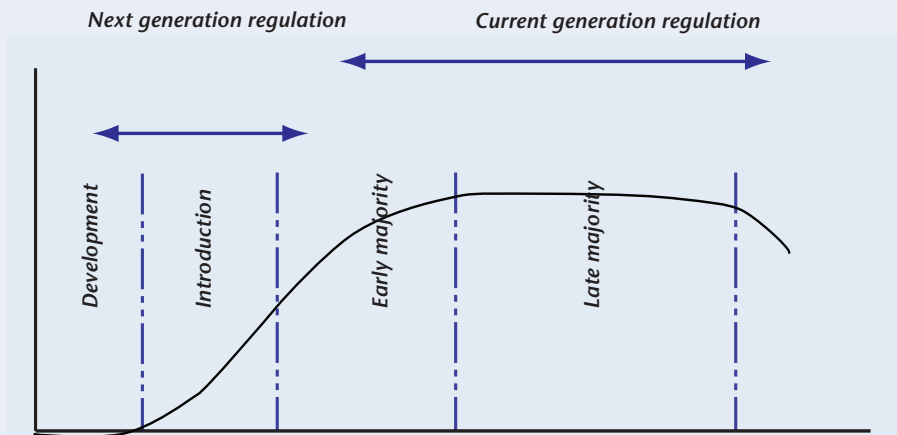
⁴ See OPTA (2010) Regulation, risk and investment incentives Regulatory Policy Note 06, May 2010

⁵ See the National Broadband Plan at www.fcc.gov

³ Long Run Incremental Cost, and Fully Allocated Cost

The NGA product lifecycle

Figure 1



Neither of these extreme approaches seems to find favour with the European Commission in the staff working paper accompanying its draft NGA Recommendation⁶. So, can we set some clear guidelines that balance the interests of consumers and investors?

What is needed is a policy that allows the earning of Schumpeterian rents in the short term, but which also encourages the investing firm to expand output beyond the profit maximising level where a monopoly would stop. This can be done by allowing pricing flexibility by the upstream entity, but also ensuring competition downstream and not precluding upstream entry by competing technologies. This leads to three guiding principles for Next Generation Regulation.

First, NGA is, at best, in the introduction phase of the PLC. Both the supply and demand side of markets behave quite differently in this phase of the PLC than they do when the product is mature and we should not impose regulation designed for mature markets on immature markets. Secondly, investors need to have the flexibility to behave in a commercial manner which allows them to recover their investment and earn rents based on genuine innovation. In a vertically integrated firm, such a fixed line incumbent, the investor is the upstream division that builds the new fibre network. Finally, regulation should not

be based on a presumption that alternative technologies cannot be a constraint on fibre access. Fourth generation wireless may not yet be a reality (but then neither is fibre), but it may have the potential to constrain a hypothetical fibre monopolist, at least at the margins.

Below are a set of more detailed elements for next generation regulation, which seek to combine the freedom of the investing firm to earn Schumpeterian rents from their innovation whilst ensuring that competition can exist on a single platform downstream and which do not prevent entry upstream by alternative technologies.

Regulatory Commitment. Investments are always subject to some degree of risk. Even government bonds carry some risk, as recent events demonstrate. Regulation is itself a source of risk if the investor has a reasonable fear that Schumpeterian or Ricardian rents earned from an investment will be regulated away prematurely. Newbery⁷ demonstrates this through a simple game theory model. If the utility investor expects that after an investment the regulator will expropriate profits if high profits are earned, but will not compensate for losses, the incentive to invest is destroyed. It is important, therefore, that regulators set out and keep to clear principles and demonstrate that commitment through their actions. In particular, where firms invest in assets with a long pay-back period, such as local access

⁶ See http://ec.europa.eu/information_society/policy/ecomm/library/public_consult/nga_2/index_en.htm#responses for the draft Recommendation and consultation responses.

⁷ Newbery, D. (1999) 'Privatisation, Restructuring and Regulation of Network Utilities' The MIT Press, Chapter 2

networks, then regulation should be equally long term. In Europe, ex ante market reviews are supposed to be held on a three year cycle, but there may be parts of the market where a longer period between reviews is needed to provide the certainty needed by investors.

Real non-discrimination with effective monitoring. When a competitor needs to buy an essential input from a vertically integrated rival, there is a natural concern that the vertically integrated firm will discriminate, through price or non-price means, against its rival. The UK and other countries introduced Equivalence of Input (EOI) and Functional Separation to address this problem. EOI ensures that the upstream entity provides essential wholesale inputs on the same terms and conditions to both its own, and its downstream competitors' retail operations. Functional Separation removes the incentive to discriminate by separating the incentives of the access division's management from the rest of the firm, and puts in place the monitoring mechanisms necessary to make visible any discrimination that might be applied. These two ingredients will be essential to promote investment in NGA. By introducing separation, Schumpeterian rents from innovation can be earned by the upstream entity, whilst all downstream firms access wholesale inputs on equal terms. Requiring access on genuinely non-discriminatory terms will help to prevent competition being foreclosed in the medium term.

Pricing Flexibility. In normal markets, firms follow different pricing strategies as products moves through their life-cycle. In the early stages, firms may price high to capture the higher willingness to pay of early adopters, or they may follow a "penetration" pricing strategy to capture a critical mass of customers to reduce the supplier's average cost. Firms may even price discriminate: setting a high price for early adopters, whilst simultaneously setting a lower price for the next wave of consumers. Through such mechanisms firms can capture Schumpeterian rents to generate an early return on their investment, before they face real competition. Regulation needs to allow the upstream entity that takes the risk of the investment to follow a commercial pricing strategy during these early phases and not seek to impose cost-orientation which may look good for consumers in the short

term, but cause long term harm by deterring investment.

Regulate at the lowest level. Mobile telecoms markets have been characterised by high growth and innovation. Mobile networks are also able to supply services to consumers without using the assets of their competitors, except for call termination. This independent competition is only partially duplicated in the broadband market, where the vast majority of access is still over the incumbents' copper networks, regardless of the retailer. Local Loop Unbundling has demonstrated that the more the competitor can control its products and seek to differentiate itself from its rivals, the more competition can flourish as firms target different customer segments. Where regulated access is necessary, therefore, it should take place at the lowest possible level of the network (which may vary in rural and urban areas), to encourage differentiation and competition and ultimately investment.

As NGA becomes ubiquitous and moves through the PLC, then, depending on whether any alternative access technologies have emerged to compete with fibre, the regulatory rules can progress more towards current generation regulation, in particular price regulation where a monopoly remains. At the moment, though, if we want to achieve the goals set by the European Commission, regulatory authorities need to recognise that we are in a different phase of the PLC to the one that regulation was designed for, and make adjustments accordingly.

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