Valuation Issues Relating to the Local Loop

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As part of the market reviews required under the new European regulatory framework, ARCEP must conduct an analysis of copper local loops. Assuming it finds that France Telecom has SMP, it can invoke a number of remedies, including cost-oriented prices. In that case, a valuation of the assets will be required, on the basis of which prices will reflect a return on capital (allowable rate of profit) and a return of capital (depreciation). A consultation document on this issue was published in April 2005.[1]

This note sets out 1) some criteria for making the choice of valuation method, 2) some generally accepted propositions about accounting and economic approaches to depreciation, 3) the debate on this same topic in the UK, and 4) some observations on options discussed in the ART consultation document.

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[1] *Consultation sur les methodes de valorisation de la boucle locale cuivre*, ART, Paris.

1. Pricing objectives

These normally fall into 3 categories[2]

a) the maintenance of investment incentives via regulatory commitment to the recovery of future costs

b) fairness as between end users and investors

c) generation of signals for efficient entry by competitors.

These are considered in turn.

A private investor anticipating partial or total expropriation of future investments will either not invest or require a return allowing for high 'regulatory risk'. In a forward-looking way, a regulator will seek to allay such fears by committing to a pattern of recovery of costs, provided they are efficiently incurred. Trust in such a commitment will be powerfully influenced by observation of the regulator's current and past conduct.

This does not necessarily require full remuneration of any given set of assets at replacement cost, if recognised past events have generated a different valuation, but it does require a 'no surprises' policy by the regulator.[3] An unexpected reduction (or even increase) in allowable recovery will bring new information into the market place and change (normally increase) the cost of capital.

[2] See also pp. 6-10 and 34-36 of the consultation document.
[3] Some 'surprises', such as a change in the timepath of future revenue which leaves its net present value unchanged, may be acceptable.

As an example, UK regulators in the energy and water sectors have generally persuaded investors of their willingness to allow returns and depreciation on a regulatory asset base (RAB) or regulatory asset value (RAV) which is a hybrid of the depreciated acquisition costs of legacy assets at privatisation (ie privatisation revenues) and the depreciated replacement cost (CCA value) of subsequent investment. By continuing to meet this commitment, regulators have been able to elicit high levels of investment, notably in the water industry where about 70bn euros of investment has been undertaken in the fifteen years since privatisation. This example shows that if the owner of an asset (in this case the UK government or taxpayer) accepts a write-down, the regulatory system can accommodate it. However, this does not apply in the cases of the local loop in either France or the UK, where the companies seek full recovery.

Turning to prices, it is clear that an asset valuation adopted for price control purposes moves income between consumers and investors. For example, the UK water industry, with assets with a historic cost valuation of 15bn euros and a replacement cost valuation of 150bn euros, was sold in 1989 for 9bn euros for price control purposes. Valuing these legacy assets above 9bn euros for price control purposes would have transferred the equivalent amount of rents to investors, which was generally seen as unfair. Hence the hybrid regulatory asset base noted above, with legacy assets valued at acquisition costs, and new assets at replacement cost.

However, where entry is possible, a low valuation of assets and the resulting low cost-oriented prices may exclude a more efficient competitor, which will have to pay market

values for newly acquired or second-hand assets. The regulator of a dominant firm wanting to encourage efficient entry will therefore seek to take account the impact of valuations on competition. Regulation on the basis of replicating competitive outcomes has strong attractions. This is especially so in telecommunications where new technical developments (especially the development of competing delivery platforms based on a variety of wire and wireless technologies) make competition technically feasible everywhere in the value chain.

The three objectives listed above offer a degree of freedom to the regulator in choosing how to value assets. Valuation is not an all-or-nothing issue; and hybrid valuations can offer useful compromises among objectives.

2. *HCA and CCA*

This section sets out some observations on the valuation issues which appear to be relevant to the matter at hand; it is not intended to be exhaustive. It relies heavily on a report prepared for the UK government in 1986 aimed at efficient prices in public enterprises.[4]

Current cost accounting (CCA) comes in two flavours – operational capability maintenance (OCM) and financial capacity maintenance (FCM). The former is designed to ensure that enough is set aside through the depreciation charge in the profit and loss

[4] *Accounting for economic costs and changing prices* (the Byatt Report), HMSO, 1986.

account to replace the asset. The second approach considers depreciation to be directed to recovery of the original funds invested. If the real price of an asset is rising, then OCM depreciation, as well as recovering invested funds, has to set further funds aside to maintain operating capacity; conversely if relative prices are falling.

It is generally accepted that in a competitive or contestable market,[5] each tranche of investment will be exactly remunerated.[6] This corresponds to the FCM principle described above, which measures surpluses from the standpoint of an investor (the relevant standpoint in a market economy), while OCM does so from the standpoint of maintaining the enterprise – more of a planning approach.

The purpose of depreciation is to measure how much an asset is worn out, consumed or otherwise loses value. From a regulatory perspective, this is done on the basis of particular assumptions about output, prices and price changes, and other costs. If those circumstances change unforeseeably depreciation changes too, but we are not concerned with this problems here, as by assumption the regulatory framework is one of incentive regulation in which prices are set in advance on the basis of 'best guesses', and adjusted within the period to meet unforeseen events only in exceptional circumstances.

[5] The alternative of contestability is added to accommodate a broader class of cost structures than those which support perfect competition where price is set equal to marginal cost. Under contestability, the threat of entry alone is enough to prevent the incumbent from making excess profits.
[6] This applies to the pure case of perfect information and no externalities across successive phases of investment.

A wide range of depreciation profiles (HCA, CCA or whatever) can deliver the full return to investors of their financial investment.[7] However, if we have set ourselves the goal of replicating the competitive or contestable outcome – ie the sequence of output and asset prices which would be observed if the output market were competitive/contestable and if there were a perfect market in secondhand goods, we seek a depreciation profile such that the forward-looking appraisal of an investment programme yields at any point an internal rate of return equal to the cost of capital. This can be described as economic depreciation.

If the perfect product and asset markets described above did exist, we could calculate depreciation by examining the market prices of assets of different vintages. However for regulatory purposes we are typically working in the opposite direction – ie. using a depreciation schedule to compute prices.

The Byatt report (Vol 2, Chapter 2) derive analytically a form of FCM depreciation which approximates closely to economic depreciation, by successively adding complications additional to those found in standard HCA and CCA approaches.[8]

The 'tilt' (or non-linearity) required in the schedule will depend upon a number of factors including running costs, expected output levels, expected real unit values and the real interest or discount rate, in addition to the general rate of inflation.

[7] See J. Edwards, J. Kay and C. Mayer, *The economic analysis of accounting profitability*, Oxford University Press 1987.
[8] See *Consultation,* Annexe 3 for an alternative contrasting of the approaches.

In principle, rising running costs, including maintenance, should lead to higher depreciation in early years and lower depreciation in later years (as would clearly be observed in a market for second-hand capital goods). Such rising costs would also affect optimal asset lives, so an interactive procedure is needed to choose depreciation profiles and asset lives which jointly maximise profits. These lives will not necessarily correspond to the physical lives of the assets.

Output levels which are constant over time are consistent (absent other complications) with straight line depreciation. If output levels vary, so should depreciation in order to maintain uniform per unit costs over time.[9]

Changes in the relative price of assets are more of a challenge. Consider a simple case in which a machine initially costing £1000 produces the same output over ten years. There is no other cost. The replacement cost of the machine falls by 10% per year. The cost of capital is zero.

At any moment, the expected value of the remaining years' output and the (declining) replacement cost of the asset must be the same. This sets a depreciation profile tilted towards the start of the period, and equal to straight line depreciation (£100 pa, in this example) only in the middle of the period.

[9] Oftel used this approach when setting depreciation levels for mobile operators for the purposes of setting termination charges. See Competition Commission, *Vodafone, O_2, Orange and T-Mobile* (2002)

The final main factor affecting the depreciation profile is the cost of capital. Assuming away the complications noted above, it is clear that straight line depreciation plus capital costs will overcharge total costs to early output. This can be countered by postponing depreciation, in order to ensure that the reported accounting profit is consistent, with equality between the chosen cost of capital and the discount rate, with the results of the DCF calculation – in other words, to ensure that accounting costs are in line with the economic cost, emerging from a competitive market. This can be achieved by ensuring that the total depreciation and 'cost of capital' charges are constant. (This is known as 'annuity depreciation'.) If implies a tilt towards deferring depreciation. Other tilt factors are then superimposed as appropriate.

In short, the tools are available to derive depreciation schedules which can be used by regulators to calculate efficient prices in a general set of circumstances on given expectations. The next section discusses a case study of transitions between two approaches and the resulting complications.

3. The UK situation

Ofcom in the UK have been addressing the same issue of local loop valuation as ARCEP, but from a different starting point. Before 1996, BT was regulated on a HCA basis, but Ofcom's predecessor OFTEL came to the conclusion that CCA was preferable as it offered better entry signals to competitors. BT's accounts, including those for the local loop, where entry was also hoped for, were switched to a CCA basis, using the FCM

approach with depreciation tilted to reflect expected relative price effects, but not the rate of discount.

It was acknowledged that in the case of the local loop the revaluation gave BT a windfall gain, but it was found that this benefit would not arise in the first post-1996 price control period. It was hoped that by the time the gain crystallised, it would no longer be necessary to regulate the local loop – hence it would not be a regulatory problem.

But optimism over the replication of the local loop faded, and, faced with the prospect of setting what appeared to be excessive charges for the copper component of the unbundled local loop, Ofcom in 2004 published a consultation document setting out four possible approaches to valuing copper,[10] noting the possibility of reverting to HCA accounting.

Following the consultation, in March 2005 Ofcom put forward proposals leading to a 'hybrid' method similar to that noted above in relation to the UK energy and water industries,[11] in the sense that assets installed in different periods would be valued according to different principles. For all assets installed post 1997, CCA principles would be employed. Pre-1997 assets would revert to 1997 valuations (taking account of depreciation in the interim). The two (pre- and post- 1997) components would be subject to (respectively, straight-line and tilted) depreciation, and be uprated each year by a

[10] *Valuing copper access. Part 1* – consultation 2004.
[11] *Valuing copper access. Part 2* – proposals 2005.

general price index – the retail price index – to maintain the purchasing power of the capital invested.[12]

In August 2005, Ofcom announced its decision to pursue the option described above.[13] As a result of this change, and a concurrent change in the cost of capital, the estimated cost of a copper line fell by about 20%.

4. ARCEP's options

ARCEP's consultation document canvasses various valuation options: HCA, CCA, CCA with economic depreciation, and the method currently employed by France Telecom, based upon the costs of a new local loop.

The choice is clearly driven by the chosen objectives of regulation and the regulator's understanding of the potential for competition. However, certain more general lessons can be drawn, to which I now turn:

- in an environment with competitive potential over the short to medium term, it seems very unlikely that HCA, with its focus on up-front cost recovery, is desirable.

[12] As Whittington puts it, this approach applies to all UK utilities is 'consistent with the view that the RAB represents a pool of shareholders' funds rather than a collection of specific investments.' G. Whittington 'Regulatory asset value and the cost of capital' in M. Beesley (ed) *Regulating Utilities: Understanding the Issues*, IEA, 1998, p. 96.
[13] Ofcom *Valuing copper access*: final statement, 18 August 2005.

- CCA is a well-tuned and well-understood accounting regime which has been utilised in UK utilities for many years, and in telecommunications regulation since 1996.
- the incorporation of economic depreciation in a CCA accounting framework has the advantage of approximating the trajectory of costs more closely with that of competitive prices.[14]
- the consultation document notes difficulties associated with the forecasting of obsolescence in relation to the France Telecom method, which is also alleged to run the risk of remunerating investments which have not been made.

There are other nuances which deserve attention:

- it is not logically necessary that all loops in France should carry the same price, when there are cost differences. In the UK, BT has begun regionally to de-average the price of certain wholesale broadband products. In due course, this might be an appropriate option for the local loop, provided its redistributive effects are not too adverse and provided it does not materially affect competition.
- as the ARCEP consultation document notes at pp. 31-2, assets have different characteristics and different approaches can be used for different categories. For example, under so-called 'renewals accounting' depreciation is replaced by a normative maintenance charge in the case of networks which require continual renewal and refurbishment rather than wholesale replacement of identifiable depreciated assets. This provides a justification for a differentiated approach.

[14] More generally, economic or annuity depreciation can be applied to equalise over time the annual payment for any asset base, for example a hybrid one.