



INCENTIVISING INVESTMENT

Investments in very high capacity networks can be risky. **FELIPE FLÓREZ DUNCAN** and **MICHAEL WEEKES** consider how regulators should account for risks in order to incentivise the level of investment required to meet ambitious government targets

Countries around the world have set clear policy objectives to improve coverage and take-up of very high capacity broadband networks (VHCNs) within the next 5-10 years through their respective national broadband plans, with many focussing on a pathway to download speeds of up to 1 gigabit per second (1 Gbps).

Despite the potential for significant benefits of VHCNs to society as a whole and at a local level, achieving widespread availability of gigabit networks for all is a significant challenge. For many countries, achieving these ambitious targets will require a significant increase in pace and geographical coverage of investment from current levels.

With the extremely large cost, the ability to make a return on the investment and the commercial viability of any solution is crucial to the decision of any investor to roll out VHCNs. This will be a particular concern where there is a threat of future regulation that might affect lifetime returns, as well as for investments in rural areas, where investment costs per premises will be higher and potential demand (the number of homes and businesses) lower.

While the number of private investors present in the market may vary from country to country, and the policy choice of pushing for full infrastructure competition or service-based competition facilitated by access regulation may differ, in many cases, the incumbent operators with significant market power (SMP) will continue to play an important role in supporting the overall roll-out target. In this regard, regulatory certainty and predictability are key to allowing investors to assess the expected returns of their investment with confidence and make a compelling business case for the investment, as recognised by the European Commission:¹

“Creating regulatory predictability is essential to promoting efficient investment and innovation in new and enhanced infrastructure. Applying a consistent and stable regulatory approach over time is crucial to give investors the confidence needed to design sustainable business plans.”

Indeed, according to the European Commission, the vast majority of the c. €500 billion that will be required to achieve its digital single market target of 100% coverage of gigabit capable networks will come from private operators.² Thus, it is essential for regulators and private operators to open a productive dialogue to understand the nature of the risks that such operators are facing (due to demand, cost and regulatory uncertainty), and clarify how these will be taken into account when designing future regulatory interventions.

In this article, we aim to contribute to this dialogue by considering what tools regulators can use to provide the right incentives to investors and encourage investment, whilst also protecting

consumers from the risk of excessive prices. While the focus of this article is on policy and regulatory tools that can be made to work within the European regulatory framework, the ideas set out here are based on core principles of economics and finance theory and are, therefore, widely applicable across the world.

We first explore how regulators can take appropriate account of the opportunities and risks faced by investors over the lifetime of investments through an approach known as “the fair bet” framework. We then dig a little deeper into a new policy proposal outlined in the European Electronic Communications Code (EECC) aimed at incentivising and rewarding investment by SMP operators entering into co-investment arrangements with other operators.

THE FAIR BET FRAMEWORK

Large-scale investments in VHCNs, including full-fibre networks, are risky due to demand, cost and regulatory uncertainty. In particular, for any incumbent SMP operator (or any successful investor who may be found to possess SMP in the future), the risk of future price regulation will be of particular concern.

Many regulators in Europe are choosing not to impose strict cost-based price controls on the wholesale access services provided over new VHCNs, in keeping with a 2013 recommendation on non-discrimination and costing methodologies and the new EECC.³ However, regulators retain the right to impose such price caps in future, should they consider it necessary for some services, or in some parts of a country, in order to ensure that retail providers (or “access seekers”) can continue to compete at the retail level even where they do not invest in their own VHCNs.

This different regulatory treatment of the same asset over time raises two immediate questions: at what point would it be appropriate to impose a price cap on an asset which has never been previously price controlled? Furthermore, at what level should that price cap be set?

The precise quantitative answers to these questions will be country-specific but they need to be guided by a clear set of principles and a common framework based on sound economics and finance theory. A key objective in this regard, as set out in the EECC, is to take appropriate account of the risk incurred by investors.⁴

At a high level, there are two concepts of risk that need to be taken into account: systematic risk and non-systematic risk.

● **Systematic risk.** In a regulatory setting, systematic risk - risk inherent to the entire market, not just a particular stock or industry - is captured in the asset beta parameter of the capital asset pricing model (CAPM) framework, and feeds into the calculation of the weighted average cost of

capital (WACC).

However, VHCNs are exposed to a number of risks that are not fully reflected in the asset beta, which, if not properly accounted for in the regulatory framework, could sufficiently impede investment and/or result in a regulatory failure to allow investors the opportunity to earn a “normal return”.

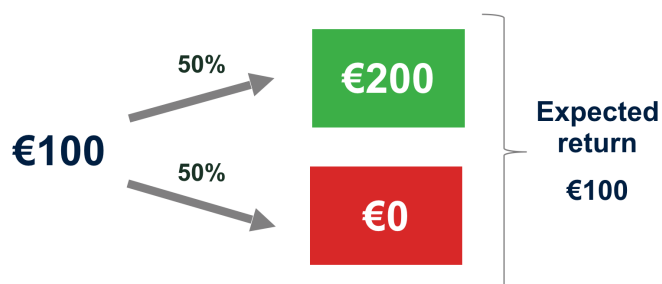
● **Non-systematic (idiosyncratic) risk.** Non-systematic or idiosyncratic risks, such as volume take-up, pricing levels, costs, etc. create uncertainty on cash flows. Indeed, this second type of risk can be significant for a new network investment, and must be taken into account by regulators when considering price controls.⁵

The prospect of price controls after any initial period of pricing flexibility can aggravate the impact of these idiosyncratic risks by introducing an asymmetry in the distribution of returns and, if not carefully calibrated, prevent investors from earning a fair level of return. This idea is captured by the concept of the “fair bet”, and can be illustrated with a coin toss game, as shown in Box 1.

BOX 1: COIN TOSS GAME & “FAIR BET” PRINCIPLE

Let us play a simple coin toss game:

- You give us €100 (think of this as the cost of investment)
- We then toss a coin. If it lands on heads, we give you €200. If it lands on tails, we give you nothing
- Provided we are using an unbiased coin with a 50:50 chance of landing heads or tails, the expected return from your investment equals €100 $[(€200 \times 0.5) + (€0 \times 0.5)]$ which is the same as your initial investment
- This is therefore a “fair bet” and provided you were risk neutral, you would take on this game.



Let us play again, only this time if it lands on heads, we determine that €200 is a bit too much of a windfall for you given that you only “invested” €100 and instead we will limit your gains to €150:

- The expected return from your investment is now €75 $[(€150 \times 0.5) + (€0 \times 0.5)]$ which is less than your initial investment
- This is no longer a “fair bet” and you would be well advised not to play this game.



← APPLYING THE FAIR BET PRINCIPLE IN COMMUNICATIONS

In the context of telecommunications regulation, Ofcom, the UK communications regulator, has defined the fair bet principle as follows:

“An investment is a “fair bet” if, at the time of investment, expected return is equal to the cost of capital.”⁶ Hence, “ensuring that the fair bet is satisfied may entail...earning returns above the cost of capital to compensate for the additional downside risks that were faced when the investment was made”.⁷

Translating this to our coin toss game, an expected return equal to the WACC would be equivalent to allowing the player to earn returns of up to €200 if the coin lands on heads, thereby giving an expected return of €100 (i.e. equal to the cost of playing the game).

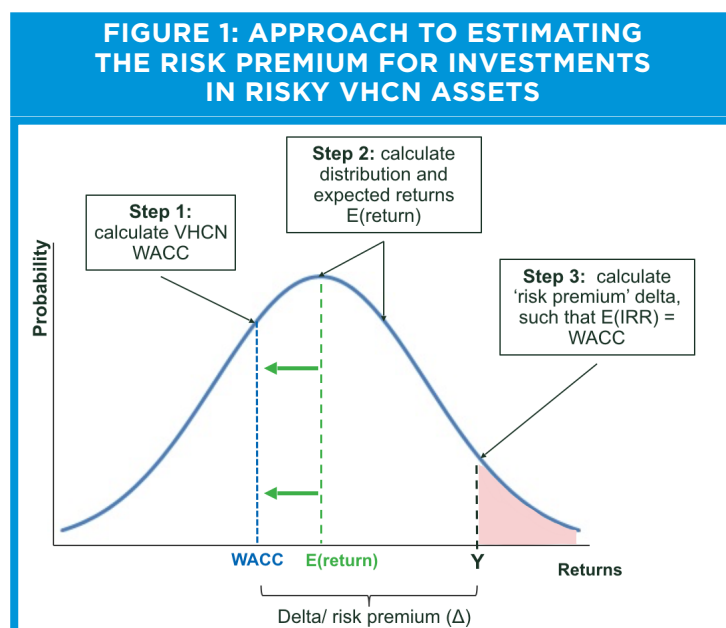
How can this framework be applied in practice when regulating investments in VHCNs? Just like in our simple coin toss game example, the regulator would need to estimate three pieces of information:

- **The “cost” of the investment.** In our coin toss game this was €100, whereas in the case of a VHCN investment, this would be the project-specific cost of capital, taking account of the systematic risks of the project

- **The distribution of returns of the investment.** In our coin toss game, this was given by the two scenarios, with a return of €0 and €200, respectively. In the case of a VHCN investment, this will need to capture the full range of possible scenarios, and the returns associated with each of these, based on the underlying sources of cash-flow risk (e.g. volumes, prices, costs)

- **The expected returns of the investment.** In our coin toss game, this was given by the 50% probability for each scenario which resulted in an expected return of €100. In the case of a VHCN investment, this will need to capture the probabilities for the full range of scenarios identified.

Having estimated these three parameters it would then be possible to calculate the level of upside return above the WACC (i.e. risk premium delta) that would be needed in good scenarios in order to ensure the investment was a fair bet. This is illustrated in Figure 1, which summarises the approach in three steps.



Source: Oxera (2017). Does Ofcom's approach in the WLA market review honour the fair bet principle?

A price control that caps returns at “Y” would equate the expected return after the cap and the WACC. Returns above “Y” would be consistent with the fair bet, but may also be considered excessive. Capping returns anywhere below “Y” would be inconsistent with the fair bet.

It is important for the fair bet framework that the assessment of returns is conducted over the lifetime of a project. For VHCNs, this will require time horizons of 20+ years. While in some cases it may not be possible for regulators to make detailed regulatory decisions that last this long, it will be crucial for investor confidence that regulators adopt a framework that explains how the fair bet principle can be honoured over this timeframe. This should, for example, include a full risk analysis of the business case, to be undertaken upfront (before the investment takes place).

Recently, the UK communications regulator Ofcom adopted aspects of this framework when considering the need to introduce price cap regulation on Openreach's wholesale access services on its fibre-to-the-cabinet (FTTC) network after 10 years of pricing flexibility.⁸ Ofcom is now consulting on how to ensure it provides a fair bet to Openreach for the roll-out of its fibre-to-the-premises (FTTP) network.⁹

Whilst these are encouraging signs, it is unclear that regulators have fully grasped the urgency of undertaking detailed risk analysis now, in order to assess how to regulate fairly in the future. It will fall on organisations such as the Body of European Regulators for Electronic Communications (BEREC) to offer clear guidance on best practice approaches to reward risks in a fair way, taking account of the interests of investors, access seekers and end-users.

SHARING THE RISKS THROUGH CO-INVESTMENT

While regulatory commitments on future pricing regulation through adherence to the fair bet principle is one way of accounting for risk, some operators have sought to directly mitigate risks associated with their investments by entering into co-investment programmes, in which they share the costs and risks of the investment with other operators while also sharing the returns. These co-investment agreements (see Box 2) can also help to overcome the challenges of economies of scale and density.

Such co-investment schemes can also be an enabler for the participation of smaller-scale undertakings in infrastructure investments, thus promoting sustainable, long-term competition—including in areas where infrastructure-based competition may be inefficient.

However, to date, co-investment initiatives have typically involved operators that are not designated as having SMP. As a result, while the number of co-investment schemes is growing, their overall impact on VHCN roll-out in the EU remains

BOX 2: WHAT IS CO-INVESTMENT? KEY CONCEPTS, MODELS AND EXAMPLES

Co-investment agreements involve collaboration between two or more operators with the aim of sharing investment risks through various means, such as:

- co-ownership of network assets
- long-term risk-sharing through co-financing
- purchase agreements that give rise to rights of a structural nature (as opposed to commercial access agreements, which are limited to the rental of capacity and do not give rise to such rights (Recital 198 of the EECC)).

These may take the form of governance models such as the following:

Special purpose vehicle (SPV)	Single operator as manager	Joint build consortium
● co-investors set up an entity that builds and owns the new infrastructure and holds shares ● wholesale access is made available (possibly exclusively to shareholders).	● one operator builds and owns the infrastructure ● other co-investment members must agree to make minimum purchase commitments to share some of the risk.	● multiple investors agree to build and operate infrastructure in separate geographic areas ● services provided over that infrastructure are made available to all other co-investors on pre-set terms.

somewhat limited.

Aiming to incentivise investment, the European Commission has introduced new conditions in the EECC relating to co-investment agreements, including a promise not to regulate operators with significant SMP that enter into an investment agreement with at least one other operator (subject to certain conditions).

WILL THIS BE ENOUGH TO UNLOCK INVESTMENT IN VHCNS?

The concept of deregulation will sound appealing to SMP operators, especially if it raises the prospect of higher returns. Operators may also see appeal in the prospect of diluting competition by bringing together potential network competitors into the joint venture.

However, the extent of this appeal will depend on how regulators interpret the requirements of the EECC.¹⁰ In turn, regulators will need to pay close attention to guidance issued by BEREC, due in 2020. This could include guidance on the following key issues:

- the terms on which members join the co-investment agreement and the prices they pay
- the terms on which parties that are not part of the co-investment agreement can gain access to the new network
- the long-term regulatory framework that applies to the co-investment agreement.

Such guidance from BEREC will be very important, especially given the lack of clarity in the current wording of the EECC around each of these points. We discuss some of these points in turn below.

TERMS OF PARTICIPATION IN THE CO-INVESTMENT AGREEMENT

The EECC states:

“The co-investment offer shall be open to any undertaking over the lifetime of the network build under a co-investment offer on a non-discriminatory basis.”

This requirement makes sense in order to avoid a situation where only a small number of operators participate in the co-investment scheme, with the rest being unable to access the full range of wholesale access products.

However, there is a risk that this requirement could give rise to arbitrage or “free-riding” opportunities. For example, depending on the terms of access, the requirement could allow access seekers to gain access to the facilities after the network has been built on terms that do not reflect the lower risk that they are bearing, relative to the risk borne by the original investors. Therefore, an important question is about what the rules and terms should be for co-investors who join at a later date.

The EECC requires that a latecomer should join on terms that are “fair, reasonable and non-discriminatory” relative to the original co-investors, with a focus on pricing that fairly reflects risks faced at the time of joining. Therefore, the price paid by any latecomer should accurately reflect the risk profile of the project at that particular point in time. This will necessarily mean a price premium, increasing over time, to reflect the reduction in risks as time passes by.

BEREC, regulators and operators will therefore need to think carefully about how to price to reflect diminishing risk and what an allowable “premium” might be for those that join the agreement later on.

In our view, the fair bet framework described previously holds the key to estimating fair and justifiable price differentials. For example, the regulator would need to be able to model two risk scenarios: one where the investors take all the risk upfront (i.e. there is no pre-commitment to buy access) compared to another scenario where some of the demand risk is reduced by pre-commitment from co-investment partners. The two scenarios will result in different risk premium “deltas” (see Figure 1), which could then be expressed as a fair price premium “delta”.

← RIGHTS OF ACCESS BY NON-CO-INVESTING ACCESS SEEKERS

While co-investors might be able to refuse access to non-co-investors for higher-speed access products, there will remain a requirement to provide some form of access to access seekers that are not participating in the co-investment. Specifically, the EECC states that:¹¹

“access seekers not participating in the co-investment can benefit from the outset from **the same quality, speed, conditions and end-user reach as were available before the deployment**, accompanied by a **mechanism of adaptation** over time confirmed by the national regulatory authority in light of developments on the related retail markets, that maintains the incentives to participate in the co-investment”. [Emphasis added]

The implication of this requirement is to introduce a form of “anchor” product regulation on the new network for an entry-level access service. As with all forms of anchor product regulation, the exact terms (including price) will act as a constraint on the degree of pricing freedom for services provided over the new network (and therefore have an effect on investment incentives).

A particularly important issue in this regard is the interpretation of the need for the anchor product to adapt over time through the “mechanism of adaptation” outlined in the EECC. If the anchor product evolves such that it becomes a better service for the same or similar price, the constraint on the network owners’ margins on higher-value services on the new network could be significant. However, if the price of the anchor product is allowed to rise while the functionality falls behind that of the higher-value services, the constraint will be weaker.

Clarity on the extent to which the price of the anchor product will be constrained, and the degree of “adaptation”, are therefore critical in determining the attractiveness of the investment opportunity. At the very least, the terms and conditions of any anchor product regulation need to be consistent with allowing investors to earn a fair return on their investment.

LONG-TERM REGULATORY COMMITMENTS

The EECC provides for a co-investment commitment to be in place for a minimum of seven years.¹² However, there is no clarity on the maximum duration of the exemption from regulatory obligations. For example, if regulatory exemptions automatically expire after seven years, this can have a significantly negative effect on the returns of the investment.

It is therefore important for the regulator to give a clear indication of how the project might be regulated beyond the exemption date to allow investors to assess the expected returns of their investment with confidence. This is related to the principle that all investments should be regulated in a way that provides investors with a “fair bet” over the lifetime of the investment, as discussed earlier in this article.

Indeed, a “fair bet” should be available to all investors of risky projects - regardless of whether the investment is made as part of a co-investment or as a stand-alone investment. Therefore, if the intention of the EECC is to make the terms for co-investment projects more favourable than for a regulated stand-alone investment, one way of achieving this would be to commit to less restrictive future price controls under a co-investment model. This might lead to an approach where allowed returns are above those necessary to satisfy the fair bet, making a co-investment model more financially attractive relative to the regulated stand-alone investment model.

SO WHAT NEXT?

In this article we have reviewed two regulatory approaches to incentivise investment in very high capacity broadband networks and take appropriate account of the risks involved with such investments as well as identified areas where further guidance may be necessary.

Ultimately, given the long-lived nature of the assets, what is particularly important is that regulatory frameworks around the world are able to guarantee fair returns for investors over the lifetime of the asset, whilst also protecting consumers from the risk of high prices. This may involve different approaches in the short run, such as price controls from day one, or pricing flexibility for the vast majority of products. However, over the lifetime of the asset, all investors should be afforded a “fair bet”. As explained in this article, this will require that regulators undertake a risk analysis of the business case before the investment takes place in order to avoid future regulatory decisions ignoring risks that existed at the start, but are harder to assess many years in the future.

Whilst we are seeing encouraging signs from regulators moving in this direction, it is also clear that more can and must be done to set up regulatory frameworks that adequately capture investment risks and strike the right balance between the interests of investors, access seekers and end-users.

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REFERENCES ¹ European Commission (2013). Commission recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (2013/466/EU), Recital 4. ² European Commission (2018). Digital single market: Political agreement on the rules shaping the telecommunication markets in the 5G era. Brussels, 6 June. ³ Recital 193 of the directive of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code, EU 2018/1972. ⁴ See article 3(4)d of the EECC (EU 2018/1972) which defines as a general objective the need to “promote efficient investment and innovation in new and enhanced infrastructures, including by ensuring that any access obligation takes appropriate account of the risk incurred by the investing undertakings and by permitting various cooperative arrangements between investors and parties seeking access to diversify the risk of investment, while ensuring that competition in the market and the principle of non-discrimination are preserved”. ⁵ The Brattle Group (2016). Review of approaches to estimate a reasonable rate of return for investments in telecoms networks in regulatory proceedings and options for EU harmonization. ⁶ Ofcom (2011). Proposals for WBA charge control, 20 January, p181. ⁷ Ofcom (2017). Wholesale local access market review. Vol 1, para 8. ⁸ Ofcom (2017). Wholesale local access market review. Vol 1. ⁹ Ofcom (2020). Promoting investment and competition in fibre networks – wholesale fixed telecoms market review 2021-26. ¹⁰ Specifically article 76 and annex IV of the EECC. ¹¹ Article 76(c) of the EECC. ¹² This is specified in article 79 of the EECC, which is the commitments procedure under which a co-investment scheme compliant with Article 76 of the EECC can be accepted by a regulator.