



Copper pricing & fibre transition: impact assessment

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ETNO Expert Forum



The starting point conditions expectations

- **Neutrality, competition and choice**
 - Technology neutral: platform mix (including VDSL with vectoring)
 - Investor neutral: it doesn't matter who invests
 - Competition and choice with current & next generation access
- **Copper pricing – replacement cost applied by most regulators**
 - European Commission - use CCA/LRIC approach
 - BEREC observe that replacement cost is
 - Predominant method
 - Could send better investment signals

Equity investor perspective



- **Trends, cash flow and health of balance sheet matter**
- **Lowering price of copper would**
 - Undermine regulatory credibility – what will happen with fibre?
 - Reduce free cash flow – lower discretionary investment to maintain return
 - Increase debt/EBITDA ratio – potentially raising cost of capital
- **What about other potential investors/business models?**
 - May be seeking level of certainty inconsistent with competition and choice which characterises the telecommunications market

Long-term investment requires credibility, not policy reversal to reduce prices

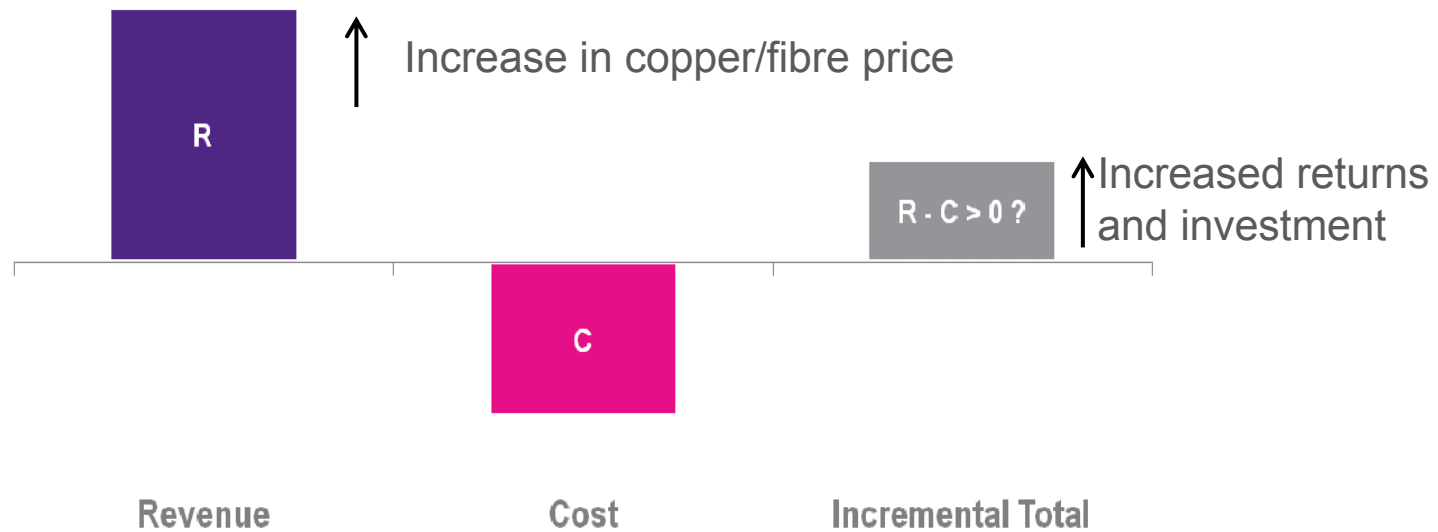


Qualitative analysis

Entrant/platform competitor



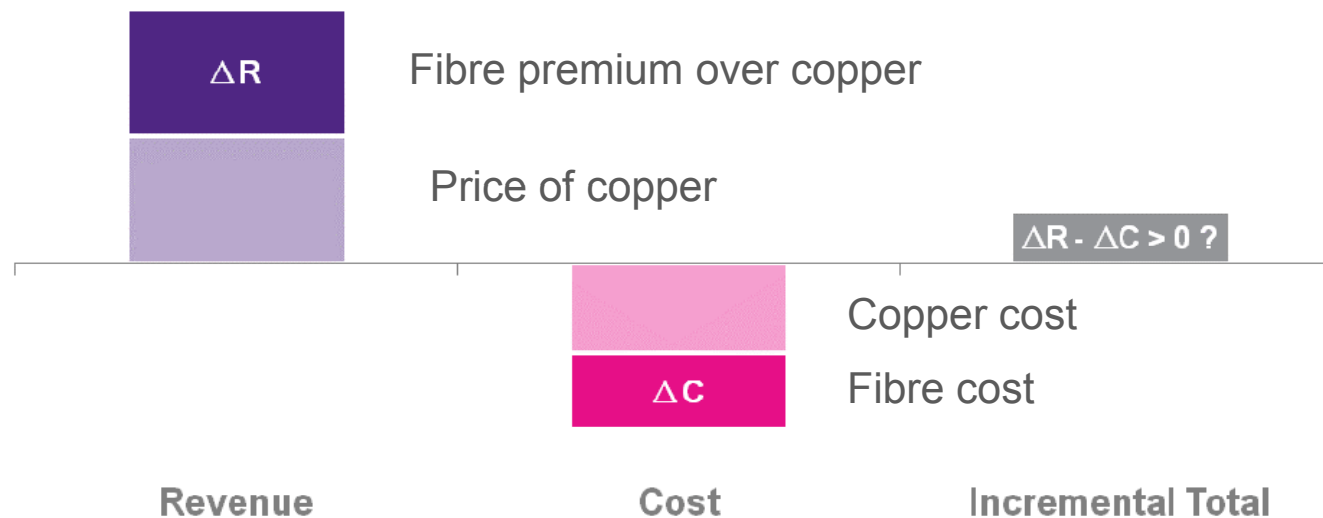
Entrant's investment decision



Cu price↑ => NGA price↑ => entrant/platform competitor investment↑

Incumbent - no platform competition **plum**

Incumbent's investment decision without platform competition



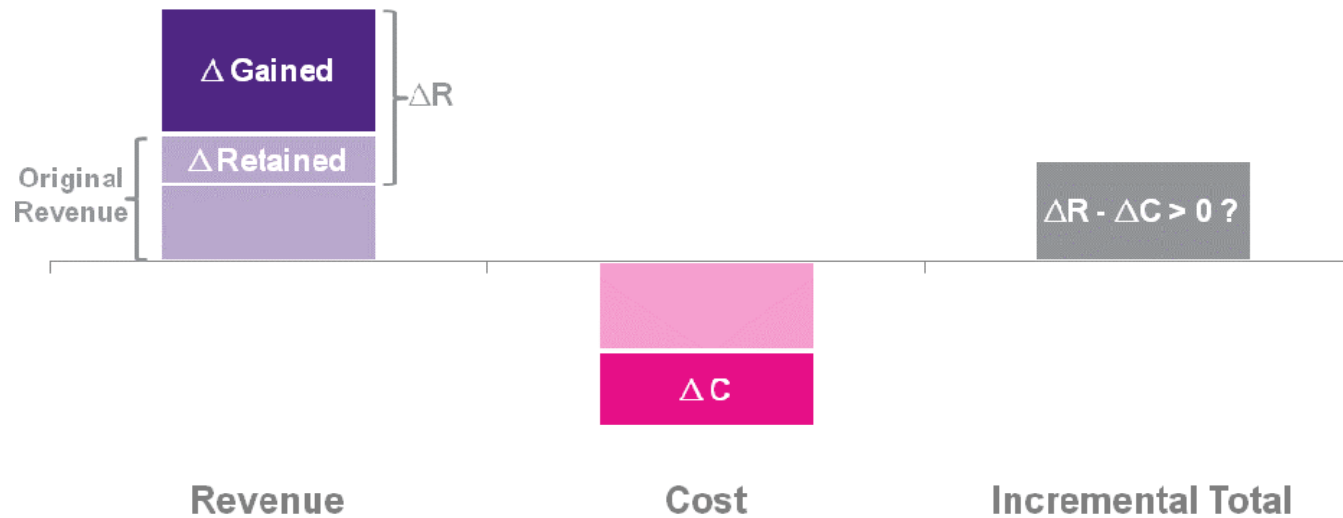
Simple and restricted analysis

Cu price \uparrow \Rightarrow ΔR unchanged \Rightarrow Neutral (static view), harm (dynamic view)

Incumbent + platform competition



Incumbent's investment decision with platform competitor



Cu price ↑ ⇒ Gain from retaining customer ↑ ⇒ NGA investment ↑

Why do some reach a different conclusion?



WIK Consult modelling	Market reality
Consider FTTH only considered, not FTTC	Both FTTH and FTTC investment
Parallel running of copper & fibre ruled out	Sustained parallel running with selective copper 'retirement' in case of FTTH
Therefore fibre price & demand independent of copper price	Copper price and fibre price/demand linkage
Platform competition has almost no impact on copper return (and 'over time' customer loss not modelled)	Platform competition impacts on copper customer retention – incentive to invest
Impact of change to lower copper price on investor expectations not factored into analysis of investment incentives	Investor expectations critical in relation to investment in long-lived assets

Key investment considerations not captured by WIK Consult analysis



Quantitative analysis

Base case (incumbent with limited competition)



- **Baseline for FTTH and FTTC**

- Costs increase with coverage
- Hurdle rate 10%
- Copper price €9
- Take-up 45% after five years
- Customer loss 2% pa

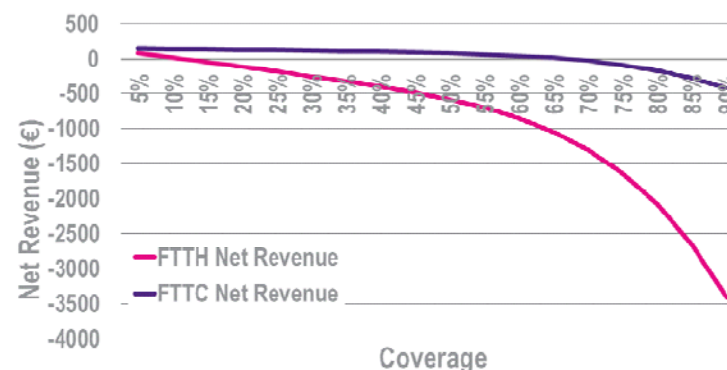
- **Fibre premium (+2% pa growth)**

- FTTC €5 per month
- FTTH €10 per month

- **Commercial coverage**

- FTTH 11% (if only FTTH)
- FTTC 67% (if only FTTC)

Incremental net revenue per premise connected



Source: Plum Consulting AIM

Test sensitivity: Cu price 1/3 ↓ or ↑; Hurdle rate 4 or 2 percentage points ↑

Incumbent (limited competition): unconditional price reduction

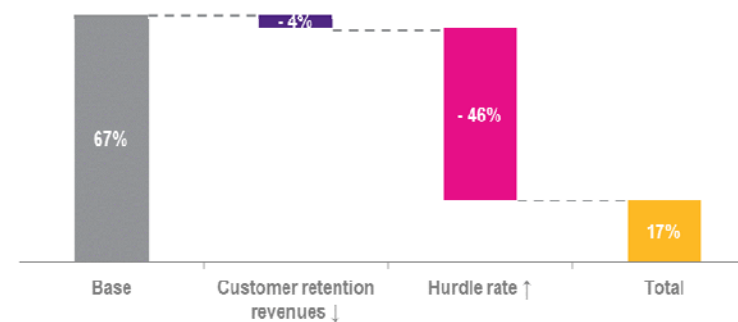


Impact of a reduction in the price of copper on FTTH coverage



Source: Plum Consulting AIM

Impact of a reduction in the price of copper on FTTC coverage



Source: Plum Consulting AIM



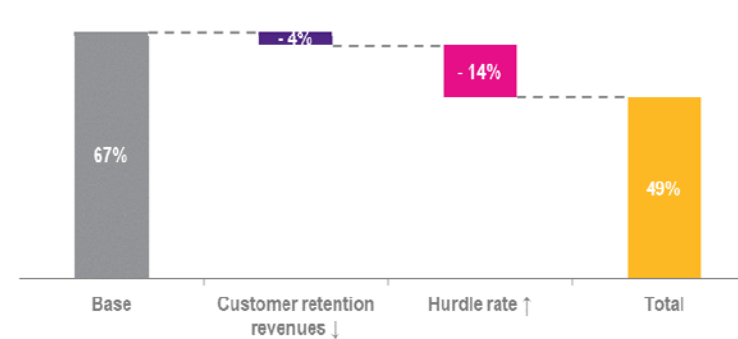
What if hurdle rate increase is halved to 2 percentage points?

Impact of a reduction in the price of copper on FTTH coverage



Source: Plum Consulting AIM

Impact of a reduction in the price of copper on FTTC coverage

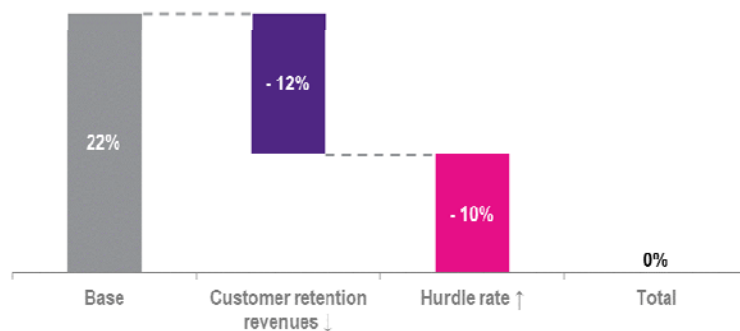


Source: Plum Consulting AIM

Incumbent (strong competition): unconditional price reduction

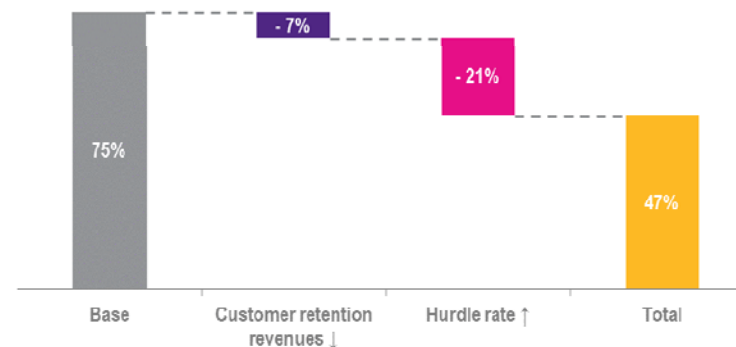


Impact of a reduction in the price of copper on FTTH coverage



Source: Plum Consulting AIM

Impact of a reduction in the price of copper on FTTC coverage



Source: Plum Consulting AIM



Impact of a positive package

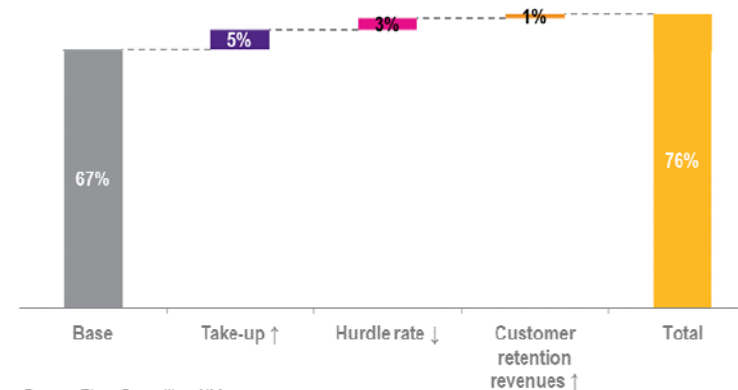
(Differentiation, investor confidence/lower hurdle rate & greater customer retention value with higher copper-fibre price)

Impact of better regulation on FTTH coverage



Source: Plum Consulting AIM

Impact of better regulation on FTTC coverage



Source: Plum Consulting AIM

Flexibility, but not obligation, regarding copper retirement may improve further

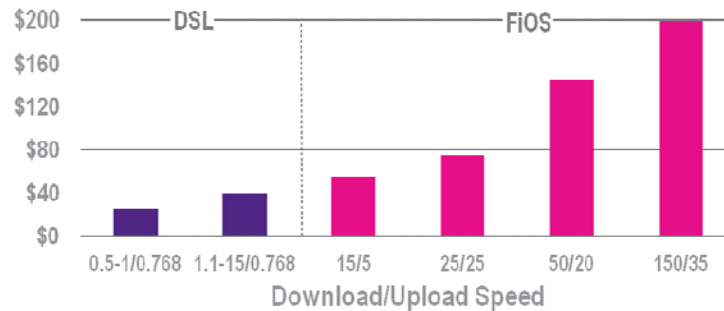


Policy

Verizon in US invested in FTTH in absence of price control from 2006



Verizon broadband DSL and FiOS pricing
Monthly charge (USD)



Source: Plum Consulting. Pricing for one-year contract with phone service.

- **Freedom to experiment & differentiate price of fibre**
 - Increase overall demand
 - Supports business case
 - Supports digital inclusion
- **Freedom to phase out copper**
 - No quick phase out in practice
 - Let lines lie fallow as customers switch
 - One exchange in Texas phased out in late 2011 (50%+ FTTH)

Grounds for different fibre remedy to support price differentiation & learning

Way forward – contingent approach

