

Table 1 - Return on capital employed for fixed and mobile wholesale charges

According to Article 13(1) of the [Access Directive \(2002/19/EC\)](#), NRAs may impose price controls on SMP operators, including cost orientation and cost accounting obligations. NRAs must take into account the investment made by the operator and allow a reasonable rate of return on adequate capital employed, taking into account any risks specific to a particular new investment network project.

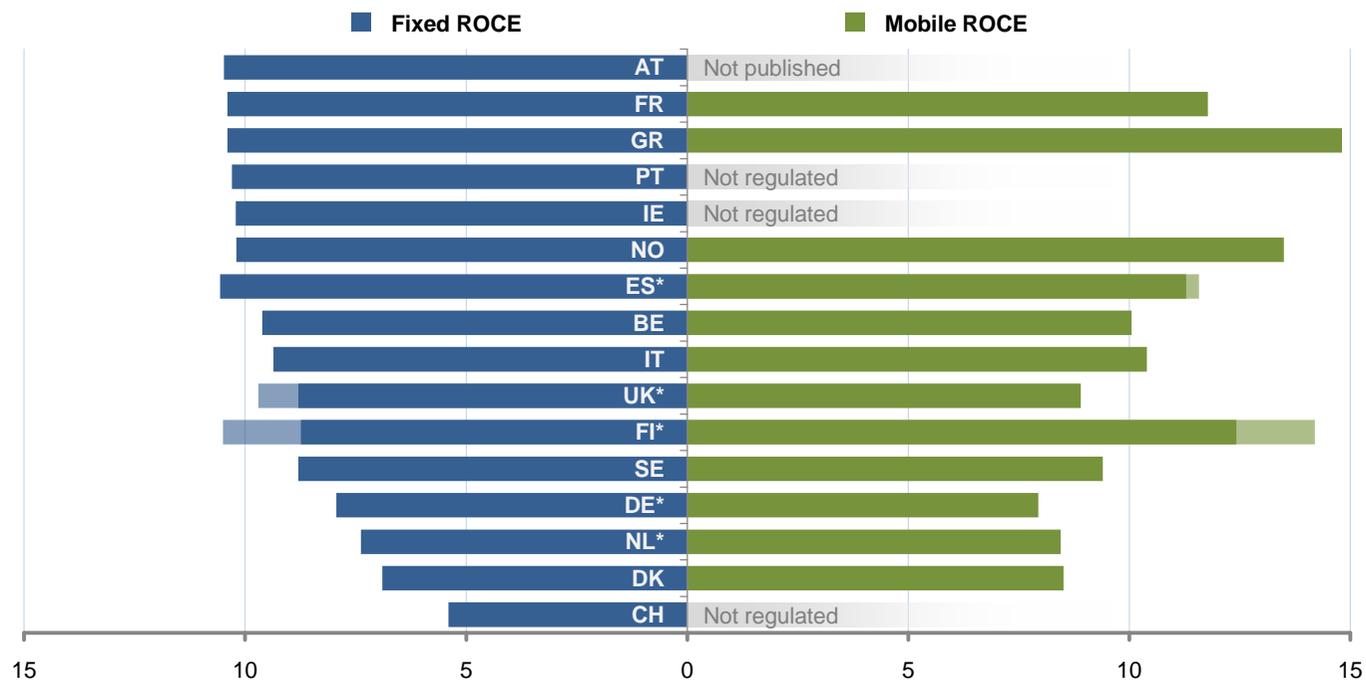
The weighted average cost of capital (WACC) can be expressed in real terms (after adjusting for inflation) or nominal terms.

It can also be expressed in pre-tax or post-tax terms.

$WACC \text{ (pre-tax nominal)} = WACC \text{ (post-tax nominal)} / (1 - T)$, where T = tax.

A pre-tax cost of capital should be compared with returns calculated on a pre-tax basis and a post-tax cost of capital with post-tax returns.

Figure 1 - ROCE for fixed and mobile operators in WE countries (source: CI research)
(excluding LU, where no decisions have been taken)



* In FI the regulator has published a range it uses when assessing cost orientation of regulated products. (FICORA has so far imposed general cost orientation obligations only, rather than setting specific caps).

In ES, CMT issues separate decisions on the rates for the three leading mobile operators, which range from 11.29% (Vodafone) to 11.58% (Orange) for 2011.

In the UK, BT has a lower fixed ROCE for its copper network than for its business connectivity services.

In DE and NL, the regulator sets a real WACC, not a nominal WACC like in other countries. For DE, the figure however shows the nominal WACC for better comparison.

The table below shows the latest rate of return on capital employed that is accepted by the regulator for fixed and mobile operators.

Country	Fixed				Mobile			
	WACC	Cost of debt	Return on equity	Source	WACC	Cost of debt	Return on equity	Source
AT	Nominal pre-tax: 10.48%	Not available	Not available	TKK decision of Aug. 6, 2009 on new fixed interconnection charges. TKK calculates new rates before each new decision (interconnection, LLU, etc.), but usually treats them as business secrets. Details are not available.	Not available	Not available	Not available	In each round of decisions on MTRs, TKK calculates the rates separately for each network operator. The rates are treated as business secrets and are not publicly available.
BE	Nominal pre-tax: 9.61%	5.7% (post-tax)	8.38% (post-tax)	BIPT decision of May 4, 2010 on cost of capital for SMP operators for 2010-2013. Rate used for interconnection, bitstream access (ADSL and VDSL2+), LLU and leased lines.	Nominal pre-tax: 10.05%	5.5% (post-tax)	7.85% (post-tax)	BIPT decision of May 4, 2010 on cost of capital for SMP operators 2010-2013. Rate used for mobile termination rates.
DK	Nominal pre-tax: 6.90%	4.95% (pre-tax)	8.50% (pre-tax)	On Oct. 29, 2010 NITA approved TDC's LRAIC-prices and updated WACC for setting regulated wholesale prices for Jan. 1 – Dec. 31, 2011 On April 12, 2011 NITA also approved 6.90% WACC to be used for setting regulated wholesale prices based on the historical cost methodology.	Nominal pre-tax: 8.51% Real post-tax: 6.56%	3.38% (post-tax)	6.38% (post-tax)	On Oct. 28, 2010 NITA set maximum MTRs and updated WACC for SMP operators for Jan. 1 – Dec. 31, 2011.
FI	Nominal pre-tax: 8.74% – 10.50%	5.91 – 6.91%	7.36 – 8.91%. (market risk premium in this calculation is 5.00 – 5.50%)	FICORA memorandum of March 15, 2011 set out the WACC calculations it uses when assessing the cost orientation of regulated products (fixed, mobile and transmission for broadcasting). Valid until end-Feb. 2012.	Nominal pre-tax: 12.42% – 14.20%	5.91 – 6.91%	11.26 – 12.82%. (market risk premium in this calculation is 5.00 – 5.50%).	FICORA memorandum of March 15, 2011 (see 2 nd column). Valid until end-Feb. 2012. See also FICORA memorandum of July 1, 2009 (1065/9310/2009) on its approach to assess cost orientation of MTRs.
FR	Nominal pre-tax: 10.4%	5.3%	13.7%	ARCEP decision 2010-0001 of Jan. 21, 2010. Valid for 2010 and 2011.	Nominal pre-tax: 11.78%	5.1%	13.7%	ARCEP decision 2010-0002 of Jan. 21, 2010. Valid for 2010 and 2011.
DE	Nominal pre-tax: 7.94% Real pre-tax: 6.92% Real pre-tax after exp. smoothing: 7.11%	5.98% (pre-tax)	11.16% (pre-tax)	BNetzA decision of June 17, 2011 on monthly LLU rental charges for the period April 1, 2011 to June 30, 2013. BNetzA used the same methodology and input data as in the recent MTR decisions (see 8 th column), but exponential smoothing led to a different result as it was applied four months later.	Nominal pre-tax: 7.94% Real pre-tax: 6.92% Real pre-tax after exp. smoothing	5.98% (pre-tax)	11.16% (pre-tax)	BNetzA decisions of Feb. 24, 2011 on MTRs for the period from Dec. 1, 2010 to Nov. 30, 2012. BNetzA changed the methodology to CAPM. BNetzA calculated first a nominal pre-tax WACC, then a real pre-tax WACC and then applied exponential smoothing over the years 2007 to 2010.

Country	Fixed				Mobile			
	WACC	Cost of debt	Return on equity	Source	WACC	Cost of debt	Return on equity	Source
					g: 7.88%			
GR	Nominal pre-tax: 10.4%	Not available	Not available	EETT decision 211/3 of April 20, 2001 and EETT decision 381/2 of April 3, 2006. OTE's return on equity and cost of debt are not mentioned in EETT's decision.	Nominal pre-tax: 14.81%	Not available	Not available	Mentioned in EETT's draft decision on M72007 of July 4, 2008. On Oct. 15, 2008 EETT adopted final decision but WACC was not confirmed there.
IE	Nominal pre-tax: 10.21% (average)	6.9% (nominal)	10.87% (post-tax)	ComReg's decision D01/08 (Doc 08/35) of May 20, 2008. According to ComReg, the WACC for eircom's fixed-line business should be set within a range of 7.77% to 11.08%. Within this range the appropriate point estimate of the WACC for Eircom is 10.21%.	No decision	No decision	No decision	There is no regulation of mobile wholesale charges: Mobile termination charges are set by MNOs in agreement with ComReg (subject to benchmark review). Mobile origination charges are not regulated after the (then) Irish appeals panel annulled the decision of ComReg to designate Vodafone and O2 as jointly dominant in market 15/2003 – see EU Telecom Flash 174/2005.
IT	Nominal pre-tax: 9.36%	5.61%	7.73%	Telecom Italia (TI) fixed wholesale services. Source: AGCOM decision 578/10/CONS	Nominal pre-tax: 10.4%	6.2%	8%	Call termination services of H3G, TIM, Vodafone and Wind: Source: Art. 12 and Annex A of AGCOM draft third round decision on M7/2007, notified to the Commission on May 16, 2011; AGCOM decision 60/2011/CONS
LU	No decision	-	-	-	No decision	-	-	-
NL	Real pre-tax: 7.38%	7.12% (nominal)	9.02% (post-tax nominal)	OPTA's third round market analysis decision of M3/2007 of July 7, 2010. Analysis Mason model and conceptual document p. 101 (OPTA applies a different WACC on the FTTH network investment of KPN/Reggefiber. This WACC includes, on top of the copper WACC, a risk premium (undisclosed) for the fibre investment in itself (this risk will gradually reduce with time) as well as for the risk of possible future regulation (3.5%) resulting from the next round of market analyses, should the returns be (much) higher than anticipated. See OPTA's second round decision on M4/2007 of Dec. 19, 2008 and pricing decision on the tariff control obligation for unbundling of FTTH networks).	Real pre-tax: 8.45%	5.58% (nominal)	9.67% (post-tax nominal)	OPTA's second round market analysis decision of M7/2007 of July 7, 2010. Analysis Mason model and conceptual document p. 101

Country	Fixed				Mobile			
	WACC	Cost of debt	Return on equity	Source	WACC	Cost of debt	Return on equity	Source
NO	Nominal pre-tax: 10.2%	Not available	Not available	Rates valid from accounting year 2011. NPT decision of Oct. 14, 2010 . No information available on return on equity/cost of debt. For more details, see NPT website .	Nominal pre-tax: 13.5%	Not available	Not available	Rates valid from accounting year 2011. NPT decision of October 14, 2010 . No information available on return on equity/cost of debt. For more details, see NPT website .
PT	Nominal pre-tax: 2011: 10.3%	Not available	9.47%	ANACOM decision of Feb. 2010. Applies to all markets where PT has SMP. The glide path adopted by ANACOM for the cost of capital of PT for 2009-2011 reduced the cost of capital from the level presented by PT in its results for 2008 (13.24%) by one percentage point per year. A revised proposal on the calculation of the cost of capital was consulted on until May 26, 2011 but no final decision has yet been made.	No decision	No decision	No decision	In July 2011, ANACOM is preparing to consult on a methodology for the development of a cost model for mobile termination.
ES	Nominal pre-tax: 10.57%	5.13% (pre-tax): 3.59% (post-tax)	7.71% (post-tax)	CMT decision of May 26, 2011 on Telefónica's rate of return on capital (according to Telefónica's cost accounting system) for 2011.	Nominal pre-tax: 11.39%	5.13% (pre-tax) / 3.59% (post-tax)	8.09% (post-tax)	Telefónica Móviles: CMT decision of July 14, 2011 on rate of return on capital for 2011.
					Nominal pre-tax: 11.29%	4.95% (pre-tax) / 3.47% (post-tax)	8.14% (post-tax)	Vodafone: CMT decision of July 14, 2011 on rate of return on capital for the period April 2011 – March 2012.
					Nominal pre-tax: 11.58%	6.00% (pre-tax) / 4.20% (post-tax)	8.25 % (post-tax)	France Telecom (Orange): CMT decision of July 14, 2011 on rate of return on capital for 2011.
SE	Nominal pre-tax: 8.8%	3.66 – 4.02% (post-tax)	7.56 – 9.11% (post-tax)	On Feb. 2, 2011 PTS published revised WACC to be used in the LRIC model for interconnection and LLU for 2011. New rate of return on capital is increased from 8.2% to 8.8%	Nominal pre-tax: 9.4%	3.66 – 4.02% (post-tax)	7.47 – 8.63% (post-tax)	On Feb. 9, 2011 PTS published revised WACC to be used in the LRIC model for mobile networks. New rate of return on capital is reduced from 12.9% (set in 2008) to 9.4%.
CH	Nominal pre-tax: 5.4% (2010)	Not available	Not available	ComCom decision of Dec. 2010 on access to Swisscom's ducts. Under art. 54 of the Ordinance on telecom services, access prices for dominant operators are based on four elements, among which the return on capital invested is set " <i>at a rate customary in the</i>	No decision	No decision	No decision	-

Country	Fixed				Mobile			
	WACC	Cost of debt	Return on equity	Source	WACC	Cost of debt	Return on equity	Source
				<p><i>telecommunications sector</i>".</p> <p>The WACC went down from 5.97% to 5.4% mainly due to beta and market risk factors.</p>				
UK	<p>Nominal pre-tax: Openreach (BT's copper access network): 8.8%</p> <p>Rest of BT: (for business connectivity services): 9.7%</p>	<p>Openreach 4.5 – 4.9% (post-tax)</p> <p>Rest of BT 4.5 – 4.9% (post-tax)</p>	<p>Openreach 7.4 – 8.9% (post-tax)</p> <p>Rest of BT 8.4 – 9.9% (post-tax)</p>	<p>WACC figures from Ofcom's July 2011 statement on WBA charge controls.</p> <p>The cost of debt and return on equity figures behind the WACC calculation are not yet available - so the figures presented here are from Ofcom's Jan. 2011 consultation on WBA charge controls.</p> <p>NB These rates of return do not apply in the case of NGA investments, for which Ofcom proposes to allow a fair rate that BT "<i>would expect in competitive markets</i>" (see Big Five Update March 2010).</p> <p>NB Ofcom calculates cost of capital separately for Openreach, BT Group and the "<i>rest of BT</i>"</p>	<p>Nominal pre-tax: 8.9%</p>	<p>4.2% (post-tax)</p>	<p>7.8% (post-tax)</p>	<p>Ofcom statement on M7/2007 of March, 2011 (see Annex 8).</p> <p>Real pre-tax WACC: 6.2%</p>