



Bundesnetzagentur

"The regulator and its judge(s)" – The Impact of Litigation on Economic Regulators – Comparison of landmark cases

Dr Annegret Groebel,
Head of Department International Relations/Postal Regulation
Université Paris-Dauphine/Club of Regulators – Panel 1
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- Overall approach: **pro-competitive regulation** as competition delivers benefits for consumers and results in competitiveness as well as driving efficient investment in infrastructure
- No micromanagement, but setting conditions prevailing in a **competitive market** in order **to incentivise** rational (undistorted) economic decisions of market players, i.e. simulate competition to stimulate competition, it is up to the operators to decide on investments, technology ultimately **bearing the risk** acc. to their business models towards which the regulator must be **neutral**
- Process of **liberalisation** was initiated by the European directives in order to open up markets for competition while the state influence was restricted to regulation in order to promote competition.
- Process of legal market opening (liberalisation) will not work without **economic regulation** to ensure new entrants (competitors) can make use of new possibilities and compete **effectively**: ex-ante regulation guarantees a **level playing field!**
- **Economic regulation** aims to initiate market processes towards the competitive equilibrium ensuring **efficient outcomes**
- This implies **accepting market outcomes**, i.e. no corrections, no interference



- **Effective regulation** is based on professional expertise (analysis) and delivers on the **objectives** set out in the law following the overall agenda of the government, i.e. the regulatory body must have a clear **mandate** and **ex-ante powers** (incl. enforcement/sanctioning powers to enforce compliance)
- This requires a **strong legal basis** and an **independent** regulator (otherwise regulation will not be effective)
- Institutional design: **independence** and **accountability** to ensure that delegated powers are not overstretched
- Procedural principles: sound administrative procedures in place to perform effectively (**good governance, proper process**)
- Fundamental principles: **predictability**, forward looking and long term commitment (**credibility**) and a principle based approach
- **Juridical review**: on the merits of the case (use of powers in line with the law and neutral vis-à-vis all parties)
- For effective regulation the NRA needs to be independent and has regulatory **discretion** to impose **ex-ante** sector-specific obligations
- **Multi-sector** regulator in Germany was built up **gradually** by adding further responsibilities to RegTP, change of names in 2005: Bundesnetzagentur (BNetzA)



- For **effective regulation** (exercising its **discretion**) you need:
- A stable and **strong** law as **legal basis**
- An **independent NRA** with a clear mandate (clearly assigned powers and tasks) + a clearly defined role (goals)
- Safeguards against political pressure, regulatory capture and centralisation (in a multi-level model)
- An **adequately resourced regulator** (with professional and highly trained staff, proper recruitment process)
- A **committed** (credible) **regulator** giving incentives to comply, working transparently (publication of a regulatory strategy) taking unbiased (neutral to all) decisions
- Speedy and efficient decision-making procedures (i.e. **good governance** through a set of internal rules/proper administrative proceedings)
- **Juridical review** (on the merits of the case, decision is challengeable before court, but stays in effect!)



- Delegating decision making powers to a professional body implementing the law with administrative decisions that is independent from industry and government in order to
 - reduce the cost of decision-making
 - increase the speediness/timeliness of administrative action
 - increase the effectiveness of regulatory measures
 - preventing political interference (no overruling)
 - preventing regulatory capture (no biased decisions)
- This requires a clear mandate, i.e. definition of
 - the set of goals to be achieved (generally laid down in the law)
 - competencies, powers as well as tasks and tools (responsibilities)
 - Clearly defined remit, i.e. no overlap with other bodies
 - scope of discretion (for the application of the law, flexibility)
 - accountability (to whom must the agency report? **external control**)
 - rules for the decision-making process: good governance (efficient process, **internal control**)
 - Well resourced NRA (incl. well trained staff)
 - juridical review (on the merits of the case, **juridical control**)



Delegation of power to a professional independent body

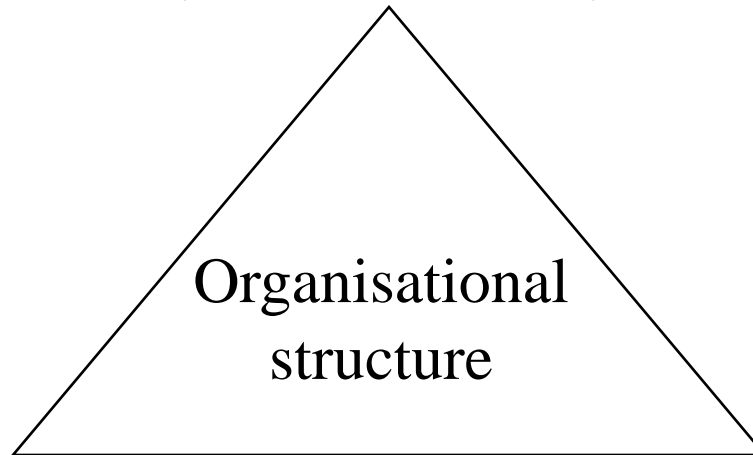


Institutional design

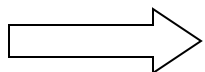
Accountability
(external control)

Organisational
structure

Juridical review
(juridical control)



Governance rules
(internal control)



Ensure that powers are used in line with the law and regulation is implemented effectively



Sector	Law	Court – 1st Instance	Court – 2nd Instance	Highest Court
Telecoms sector	Telecoms Act	Administrative Court Cologne (VG Köln)		Federal Administra. Court, Leipzig (BVerwG)
Postal sector	Postal Act	Administrative Court Cologne (VG Köln)	Higher Administr. Court Muenster (OVG)	Federal Administra. Court, Leipzig (BVerwG)
Railway sector	General Railway Act, Railway Regulation Act	Administrative Court Cologne (VG Köln)	Higher Administr. Court Muenster (OVG)	Federal Administra. Court, Leipzig (BVerwG)
Energy sector	Energy Act	Higher Regional Court Duesseldorf (OLG Düsseldorf)		Federal Court of Justice, Karlsruhe (BGH)

Federal Constitutional Court (Karlsruhe, BVerfG)

(if parties are affected in their fundamental rights, but test of admissability), very rarely used, but a few decisions were taken on regulatory cases



- 5 questions relating to material issues will be analysed and the landmark rulings of the relevant courts shown which are important to clarify the relationship and confirm the regulator's role in implementing effective regulation
- While there are 4 different sector-specific regulatory laws and 2 different court branches – administrative and a specialized civil court – the questions brought before court focus on the same issues
- As all major decisions on access and in particular price regulation are challenged and tested, it is important that landmark rulings confirm the regulator's decision/position, but this presupposes a strong legal basis and a clear text
- 5 procedural questions will also be addressed
- Conclusions



- 1. Who is regulated ex-ante?
- 2. What is regulated (remit)?
- 3. Price/cost regulation:
 - Is there a correlation between prices and costs?
 - What costs are regulated (costs covered)?
- 4. Cost standard and calculation methodologies
- 5. Cost of capital and WACC (rate of return)



- **1. Who is regulated ex-ante?**
- In energy/railway: all operators as the grid is considered to be a natural monopoly, no market analysis: no discussion
- In telecoms/post: only dominant operators, i.e. market analysis needed to designate an operator as having SMP (trigger for regulation), it is irrelevant whether the grid was rolled-out during monopoly times
- Case in telecoms: in 2006 the 4 mobile operators (MNOs) designated as SMP operators appealed the decision of BNetzA to impose an obligation of ex-ante termination rates regulation, arguing that their grids were rolled-out privately and not in monopoly times: VG Köln and BVerwG (2 April 2008) confirmed BNetzA's decision to designate the 4 MNOs as having SMP as BNetzA has a **wide margin of discretion** which is only to a limited extent controllable by the court. Consequently it was also justified to impose the ex-ante rates regulation.

1. Who is regulated ex-ante? cont.



- The 4 MNOs appealed before the Constitutional Court because they considered themselves affected by being denied the right of legal recourse (Art. 19.4 GG)
- The Constitutional Court did not admit the case (decision of 8 Dec. 2011) for the following reasons:
 - While usually a court has to check the conformity of an administrative decision with the relevant law, this does not prevent the legislator to grant the administration a margin of discretion which is only to a limited extent controllable by the court as long as he respects the requirement that the exclusion of the „juridical control“ is justified by an important reason which was the case for the Telecoms Act (in the light of the relevant EU legislation and the logic of the Telecoms Act)
 - Thus the operators are also not affected in their freedom of economic activity as the goal of promoting competition can only be achieved with ex-ante regulat.



- 2 further interesting court rulings regarding the **regulatory discretion**:
 - One by the BVerwG in January 2009 stating that the legislator cannot generally exclude the discretion for certain cases
 - Even more important: **ECJ ruling C-424/07** of 3rd December 2009 stating that the legislator cannot limit the regulatory discretion if the EU framework foresees that it is the regulator who decides on the appropriate regulatory measures (e.g. which obligations to impose) – this was a decision against the German law foreseeing „*regulatory holidays*“ for newly rolled out telecom grids (i.e. preventing the regulator to impose ex-ante obligations) brought forward by the Commission in an urgent infringement procedure

2. What is regulated (remit)?



- In telecoms it was shortly discussed whether and to which extent network access services and related services („annex services“ such as „collocation“) are covered by the ex-ante rates obligation – as they are strictly speaking not telecoms services, but it was decided that all services necessary to make effective use of the network access right (incl. services realized via the network) are covered as otherwise this right of the alternative operators could be undermined (comprehensive understanding)
- In the postal sector the Postal Act foresees in section 28 that access to the postal network must be granted by the dominant operator (so-called „incidental services“/work sharing agreements), but compared to telecoms, the access is designed rather restrictively and in particular no distinction is made between business customers and consolidators (alternative operators), furthermore partly the price is regulated only „ex-post“

2. What is regulated (remit)? cont.



- Case in the postal sector: in 1999 BNetzA ordered Deutsche Post AG to submit **all contracts** regarding different incidental services to BNetzA for checking (acc. to section 30 Postal Act), but Deutsche Post did not comply (arguing that these are not all incidental contracts), thus a lengthy court case followed which was finally decided by a ruling of the **BVerwG** on **20 May 2009** confirming the **obligation** of Deutsche Post **to submit all contracts** to BNetzA.
- The Court defined the term „**incidental service**“ and also stated that in order to promote competition it is necessary that **all parts of the postal value chain between sender and receiver** can be accessed as incidental services and that BNetzA has the right to check the contracts in order to prevent discriminatory conditions. For a complete overview it is necessary for BNetzA to have **all** contracts.
- Thus as in the previously mentioned ruling, the reason for confirming BNetzA's view was t. goal of promoting competit.



■ 3. Price/cost regulation:

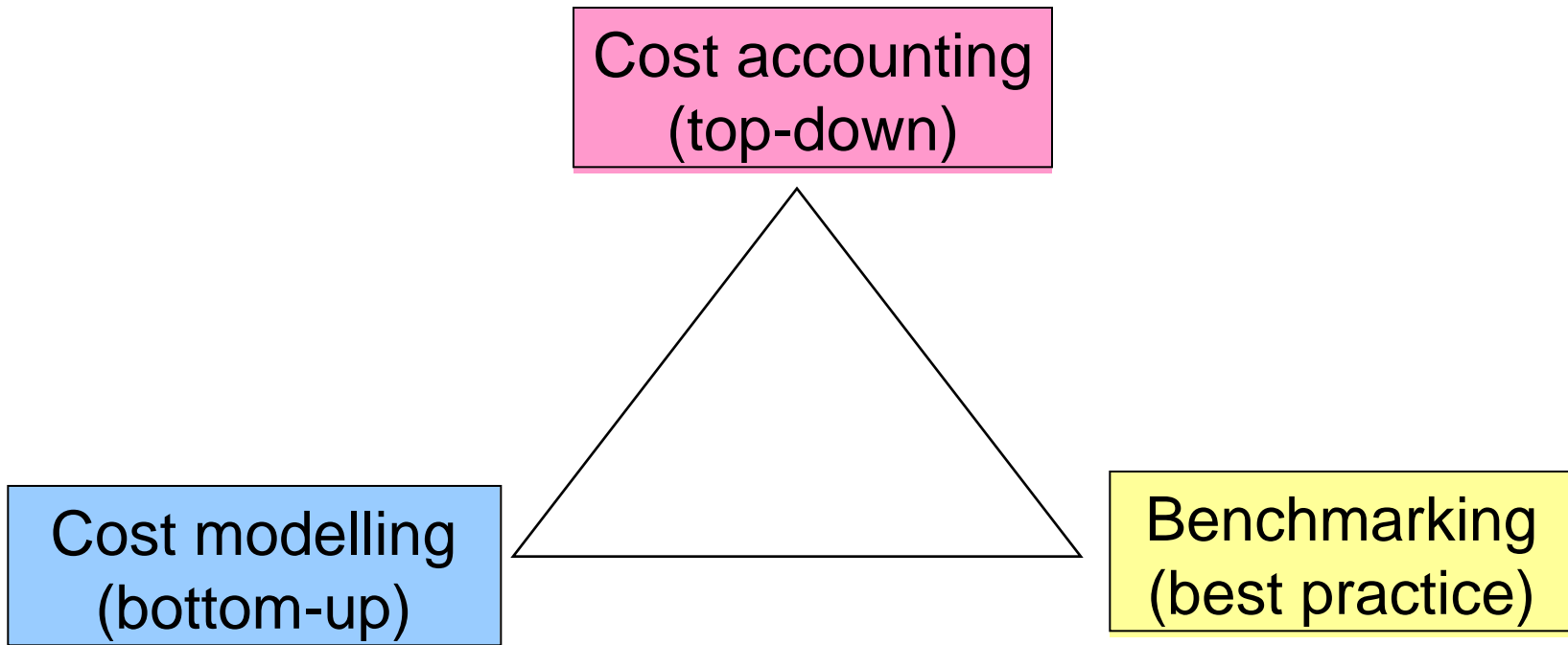
- Is there a correlation between prices and costs?
- Yes, there is a relationship between prices and costs, thus the regulated entity is obliged to provide *meaningful* cost documentation (underlying the rates applied for), besides this aspect of evidence/burden of proof (confirmed by both VG Köln/OVG Münster in 2005 for telecoms and OLG Düsseldorf for energy in 2008) it is the fundamental assumption underlying the model of economic regulation replicating competitive pressure with regulatory pressure in order to mimic the outcome of a competitive market to steer rational economic decisions of market parties that is vital for a successful implementation
- What costs are regulated (costs covered)?
- **All costs** fall under the obligation i.e.
TOTEX = CAPEX + OPEX + Common (overhead) costs, in particular the **cost of capital incl. the rate of return** is subject to the obligation of cost orientation (see Q5)



- **4. Cost standard and calculation methodologies**
- 2 obligations: obligation of **cost accounting** and obligation of **cost orientation**, the latter being specified with a certain **cost standard**
- 3 **methods** of cost calculation:
- **Cost accounting** (checking of /verifying the submitted cost documentation, **top-down approach**), reducing the actually incurred costs to the efficient level by deducting inefficient costs + correcting wrongly allocated costs
- International **benchmarking**: prices of markets open to competition or regulated acc. to the same cost standard, using the **best practice approach**
- **Analytical cost models** constructing an efficient network with technology available today (**bottom-up approach**); Telecoms case: VG Köln allowed the use of a bottom-up cost model in 2006 even though it was not explicitly mentioned at that time in the relevant regulation, appeal withdrawn, now explicitly stated
- Correctly applied all 3 methods should give the same result: a price that is equivalent to the cost of efficient service provision
- **Prices** prevailing in a competitive market are equal to the cost of efficient service provision (**cost standard**) as only efficient operators will stay in the market („*survival of the fittest*“)



Three cost calculation *methods*:



Competitive price = cost of efficient service provision
(as cost *standard*)



- When setting the price, the regulator has the **discretion** to choose the calculation methodology and to determine the **efficient cost** as it is the **cost standard** incl. the *appropriate* rate of return as the cost of capital is part of the total costs and must also fulfill the efficiency requirement. **Regulators** must have the **power** to reduce actually incurred costs to the level of efficient costs; legally: a „*partial approval/minor*“ or right to change the application; economically: enforcing a hard budget constraint/ cost control as competitive pressure would ensure, which results in:
 - An efficient relation of input and output factors, i.e. the relationship cannot be improved further
 - An efficient cost level and cost structure, i.e.
 - No overstaffing (not accepting costs for workers not needed as a result of mismanagement),
 - No overinvestment (no „goldplating“, not accepting costs for overcapacity, stranded investment, both the result of mis-forecasting the demand, technology/market developments etc.),
 - No misallocated common costs (to prevent unfair cross-subsidisation)

4. Application of efficiency cost standard conf.



- Cases in energy: in a series of landmark decisions the **BGH** confirmed in **2008** that BNetzA was right in its first 4 TSO rates approval decisions in 2006 of capping the share of equity considered necessary (relevant) to serve electricity customers *efficiently* („only capital employed“ will be taken into account), a too high share of equity is typical for a lack of competition and can therefore not be accepted as it runs counter to the objective of promoting [the results of] a competitive market; thus instead of a so-called old-style „*cost-plus* regulation“ resulting in the well-known *Averch-Johnson*-effect of over-capitalization, the efficiency cost standard was pivotal and correctly used
- The BGH expanded further that restricting the share of interest-bearing equity to the efficient level does not affect the fundamental property right (Art. 14 GG) as this does not include future profit expectations (see also Q5)
- ECJ case C-277/16 Opinion of the AG stating that UKE has the right to set efficient costs below actually incurred costs

5. Cost of capital and WACC (rate of return)



- As shown, the cost of capital incl. the rate of return is subject to cost orientation and thus has to fulfill the cost standard, i.e. the efficiency requirement
- However, in particular the WACC is the most disputed parameter in price/cost regulation and we can distinguish 3 phases:
 - Phase 1: „you are not entitled to set the rate of return“
 - Phase 2: „It's not enough, I want more“
 - Phase 3: „I want a guaranteed rate of return“
- In particular in capital-intensive network industries we have to run through all 3 phases and reach (hopefully) a finally accepted stage only after numerous and lengthy court cases including studies etc. from all sides
- This will be demonstrated in the following slides with some of the most important court decisions in telecoms and energy



- **Phase 1:** „you are not entitled to set the rate of return“, because
 - It infringes the constitutional right of the entrepreneur of economic activity (Art. 12 GG) and the property right (Art. 14 GG)
 - But:
 - no one has the right to supernormal profits nor does this protect a certain status quo („substance“), thus the regulated entity is also not protected against insolvency as this is not the case either in a competitive market
- Thus, if the legislator sets the objective of promoting a competitive market, the regulator also has the right to replicate the competitive pressure with regulation in order to reach this objective, all regulatory measures have to be assessed against this objective
- In both sectors the relevant legal basis gives the NRA the power to decide on the appropriate rate of return (on equity)



- In telecoms the VG Köln confirmed its view of a wide margin of discretion early on and explicitly in a ruling of 2004 for the Telecoms Act 2004 (sect. 31.4)
- This was confirmed by the BVerwG in its ruling of 23 Nov. 2011 (6 C 11.10 – 13.10) and 25 Sept. 2013 (6 C 13.12) and the margin is only controllable to a limit extent by the court
- In energy the OLG Düsseldorf in its decision of 24 April 2013 did not see a margin of discretion uncontrollable by the courts, but confirmed the choice of the method by BNetzA. However in its
- Decision of 25 Jan. 2015 the BGH took a differentiated view: only the facts of the market situation that serve as the basis for the decision on the rate of return on equity are fully controllable, whereas the complex decision of setting the risk premium which depends on a number of different factors and has an element of prognosis the regulator is given a margin of discretion to choose the methodology and set the parameters of the formula that is controllable by the court only to the extent that there are no mistakes of using a state-of-the-art method deemed appropriate to reach the objectives and is reasoned sufficiently by the NRA



- **Cost of capital:** the investment value is the basis for determining the monthly costs for the usage of the (telecoms) infrastructure and is spread over the economic lifetime of usage of the assets (depreciation); it might be modelled bottom-up and should take new efficient infrastructure into account at an appropriate point of time (MEA = modern equivalent asset)
- **Return on investment:** to determine an *adequate* return on *capital employed* acc. to sect. 31.4 [32.3] Telecoms Act BNetzA takes into consideration *in particular*:
 - The capital structure (equity/debt ratio) of the SMP operator
 - The situation on national and international capital markets and their evaluation of the regulated entity
 - Requirements for the return on investment including the **risk** of the investment and specific risks of the capital employed [+ possible specific risks when rolling-out a NG network]
 - The long-term stability of the economic framework incl. the competitive situation of the telecommunications markets



- Section 21 of the Energy Act states that the rate of return should be appropriate, competitive and risk-adjusted on capital employed which is specified further in the relevant ordinance:
- Return on equity for new facilities as per section 7(4) StromNEV and GasNEV:
- The allowed rate of return on equity needed for new installations may not exceed the average **current yield** for the last ten full calendar years **on fixed interest securities of domestic issuers** as published by the Deutsche Bundesbank, plus an **appropriate mark-up to cover entrepreneurial risk specific to network operation** (criteria specified in section 7(5)).



- **Phase 2:** „It`s not enough, I want more“
- After having „accepted“ the court decisions that the regulator is entitled to set the *appropriate* rate of return, the second phase is characterized by the discussions on the result as a whole (always too low) and the setting of every single parameter value
- Both in telecoms and energy the legal texts foresee a number of criteria that the regulator should take into account *in particular* when setting the appropriate rate of return (on equity)
- In energy the BGH confirms in its decision of 27 Jan 2015 the 2008 BNetzA decision (and the OLG Düsseldorf of 24 April 2013) on the rate of return on equity for the first period and runs through every step of the assessment confirming that BNetzA stayed within the margin of discretion provided by the law, in particular whether the choice is suitable to promote the overall objectives of the law, thus stating that the users` interest have to be taken into account as well and that therefore not automatically the highest value has to be chosen, rather the rate of return an investor would expect in a functioning competitive market, no „extra-premium“ is needed nor does a regulatory risk exist



- In telecoms the legal text is broader and gives the regulator a wide(r) margin of discretion, thus the court's analysis is not so detailed as in the case of the energy court decisions, but the BVerwG in its decision of 25 Sept. 2013 (6 C 13.12) went in detail through the question on the valuation of the asset base (CCA or HCA) and while confirming that the regulator has the discretion to choose the method which is only controllable to a limit extent by the court, stated that the regulator had not sufficiently reasoned the suitability of the chosen methodology to reach the objectives set by the law and assessed how to balance conflicting goals.
- The BVerwG also refers to the ECJ decision (C-55/06) of 24 April 2008 confirming that the regulator has a margin of discretion to choose the method when calculating the efficient cost.
- Thus the courts both in telecoms and energy cases confirmed that the regulator has the discretion to choose the method to calculate the appropriate rate of return and that the requirement of efficiency applies to it as well, i.e. the regulated entity is not entitled to a higher rate than an investor can reasonably expect in a functioning competitive market. In other words the courts confirm the approach of an economic regulator of setting an undistorted price (prevailing in a competitive market).



- **Phase 3:** „I want a guaranteed rate of return“
- Reaction of the financial crisis as well as the ultimate request for more (see Phase 2)
- However, the rate of return on equity is the reward for taking risks and must be risk adequate which means covering various risks not covered in costs such as the risk of a price change etc. including making losses
- Thus it is logically impossible to guarantee a fixed rate of return. The system functions only if the one taking the risks gets a „fair“ rate of return and is liable for losses
- Thus there cannot be any protection against market exit nor can there be any „add-on“ or extra risk premium as it would **distort the decision making** in a competitive market.
- Only the „appropriate, competitive and risk adjusted“ rate of return is justified and sufficient to guarantee the viability of investments and fulfills the objectives of the law.



- Regulation is only one factor influencing the investment decision
- A risk adequate rate of return is important to incentivise investment, however the rate of return should not distort the investment rationale of the operator, if e.g. the risk of investment in NGA infrastructure increases, the risk premium will reflect this
- **Predictability** is key for investors' confidence as uncertainty increases costs, therefore regulators should:
 - Announce the regulatory strategy (*commitment*)
 - Long and stable regulatory periods (*continuity*)
 - Implement the strategy as announced (*credibility*)
- Regulation cannot „*regulate away*“ the risk which is still born by the investor for which he gets the risk premium, the choice of the project to invest in stays with the operators/investors (no investment planning by the regulator)
- Regulation can also not grant more than the market premium, i.e. „*add-on*“ as this would incentivise inefficient (stranded) investm.
- Regulation does not create a „*regulatory risk*“, as long as it aims at following the calculation of an efficient investor, i.e. calculates a risk adequate rate of return



- 1. Evidence requirements and burden of proof
 - Clearly up to the regulated entity, non-compliance entitles the regulator to choose another method (such as using a cost model even if not stated explicitly)
- 2. Requirements of reasoning/justification
 - Up to the regulator to explain its decisions, several court decisions sending a decision back not because it was materially wrong, but not sufficiently reasoned
- 3. Timings/delays/deadlines etc.
 - Submitting evidence too late can be ignored (after a change of law clarifying the text)
- 4. Participation of third parties in the administrative proceeding as well as the court proceedings (who is entitled to challenge a decision?)
- 5. Transparency vs. confidentiality requirements



- 4. Participation of third parties in the administrative proceeding as well as the court proceedings (who is entitled to challenge a decision?)
 - Decision of the Constitutional Court on 22 Aug. 2011 confirming the right of the association of postal competitors to challenge the BNetzA decision on setting the price for the standard letter (price cap decision), after various further court cases, finally the decision was sent back to BNetzA to redo it taking into account the rulings
- 5. Transparency vs. confidentiality requirements
 - Competitors requested insight into the documents without any redactions (for confidentiality reasons), conflict of 2 fundamental rights: the right of legal recourse and the freedom of economic activity.
 - The Constitutional Court in decided (1 BvR 2087/03) that not everything has to be disclosed, but allowed a so-called „*in camera*“ proceeding only for the interim proceeding to decide which parts can basically be kept confidential. This raised the burden of proof for the regulator in the main proceedings.



- In all regulated sectors the decisions relating to price control (network charges) are challenged before court, in particular regarding the cost of capital (incl. the rate of return)
- Courts generally confirmed that BNetzA has the discretion to choose the method to calculate the efficient costs (incl. the cost of capital and the rate of return on capital) and is not bound to the cost accounted for/actually incurred as the regulated entity is entitled only to the efficient cost, which sets a hard limit beyond which the regulator cannot go
- Courts made clear that the rate of return cannot be another than what an investor would reasonably expect in a competitive market
- It can be concluded that the courts gave the regulator a far reaching power to implement regulation replicating the results of competition
- Depending on the detailedness/prescriptiveness of the legal basis courts differ in the degree to which they allow a margin of discretion controllable by the court only to a limit extent setting out clearly the criteria for the extent of the juridical review, mainly that the methods must be suitable to reach the objectives of the law a. the assessment explained by t. NRA
- This raises the point that in this case the accountability must be ensured by the external and internal control, i.e. the 3 forms interact as otherwise the regulator would not be controlled



Thank you for your attention

Dr. Annegret Groebel
annegret.groebel@bnetza.de



Annex



- Independent higher federal authority in the scope of business of the Federal Ministry of Economics and Energy
- Sector-specific regulator tasked with ensuring effective competition in 5 network industries:
 - Telecommunications and Posts (since 1998),
 - Electricity and Gas (since 2005), and
 - Railways (since 2006)
- Electricity network planning (since 2011), and HV electricity network permitting (2013) as a result of the *Energiewende*
- BNetzA employs ar. 200 staff in energy regulation, up to 240 staff are being recruited for HV electricity network planning and permitting (of national a. XB transm. lines)
Overall headcount for all sectors: ar. 2900 staff members
- Budget: 214m euro (2016), BNetzA is tax funded



HQ in Bonn



- **Competition** as a means to create economic welfare and in particular consumer benefit (lower prices, better quality and more choice, i.e. a better value proposition for the user)
- **Competition** is the best driver for efficient investment and consumer benefits, but in network industries it can only be achieved with strict access and price control regulation applied ex-ante
- **Regulation** as a means to promote sustainable competition via opening markets in network industries a. creating a level playing field with non-discrimination, access and price regulation
- Fundamental principles: **predictability**, forward looking and long term commitment (**credibility**) and a principle based approach to ensure confidence of investors for long-term investment decisions
- While the regulatory framework must be **predictable** it must also be **dynamic** in order to deal with **changing** markets
- **Network industries** are characterised by market entry barriers resulting from substantial economies of scale + scope as well as network effects requiring sector specific regulation to overcome structural **market entry barriers**

Comparison of energy a. telecoms regulation



Sector / Criterion	Energy	Telecommunications
Concept / Type of regulation	Infrastructure regulation, each network op is regulated as a natural monopoly	Market regulation, only op. having SMP are regulated, infrastructure competition possible
Objectives	Competition in up-/downstream markets, capability to invest and viability of the grid	Competition on all levels, initiate market processes, competition drives efficient investment
Approach to price regulation	Minimum: set tariff methodology, maintain the grid	Cost-oriented price regulation, costs relevant for competition
Cost standard / Costing methodology (incl. cost of capital calc.)	Cost of efficient service provision of a structurally comparable op.; detailed provisions for RAB and reasonable rate of return on equity	Cost of efficient service provision, LRIC/CCA/MEA, reasonable rate of return (WACC)
EU legal provisions (2009) National legal provisions	Art. 37/Art. 41 Electricity/Gas Di. Sect. 21/21a Energy Act. 2011, Incentive Regulation Ordinance	Art. 13 Access Directive Sect. 27-38 Telecommunicat. Act 2012



- **Costs** = consumption/usage of the network (production capacity) and its elements to produce a service
- Cost categories:
- **CAPEX** = capital costs (costs of the investment, long term), which consist of
 - Rate of return (equity, debt, risk premium to reflect risk adequately; **WACC** = weighted average cost of capital)
 - Annualized investment (based on investment/asset to cover usage costs over the economic lifetime)
- **OPEX** = operating costs (i.e. costs of running the network daily, short term, e.g. for power, heating, housing)
- **Common costs** = for the usage of several services, require rules for the allocation of these costs to the different services: **allocation keys**



- OPEX for specific processes (e.g. non recurring ordering costs for the LLU):
 - Top-down calculation of efficient hourly wages
 - Activity based costing to calculate the cost of the process (bottom-up)
- OPEX for operation and maintenance of specific assets:
 - Top-down calculation of mark-up factor
 - Multiplication with volume of the assets employed in the efficient network
- **CAPEX**
 - Adjustments of the network structure (asset base, MEA concept). Analytical cost models are used, if required (e.g. *efficient investm.* of the access network).
 - Adjustment to appropriate *replacement values* (CCA) using contract data and indices of the National Bureau of Statistics (valuation of assets).
 - Efficient *cost of capital* (rate of return, valued asset base) is determined by market data and capital structure.



- Section 21 of the Energy Act states that the rate of return should be appropriate, competitive and risk-adjusted on capital employed which is specified further in the relevant ordinance:
- Return on equity for new facilities as per section 7(4) StromNEV and GasNEV:
- The allowed rate of return on equity needed for new installations may not exceed the average **current yield** for the last ten full calendar years **on fixed interest securities of domestic issuers** as published by the Deutsche Bundesbank, plus an **appropriate mark-up to cover entrepreneurial risk specific to network operation** (criteria specified in section 7(5)).



The following factors must be taken into account in determining the mark-up to cover entrepreneurial risk specific to network operation (acc. to section 7.5 of the relevant energy ordinances):

- situation on national and international capital markets and the assessment of network operators in these markets
- average return on the equity of operators of energy networks in foreign markets
- observed and quantifiable entrepreneurial risks



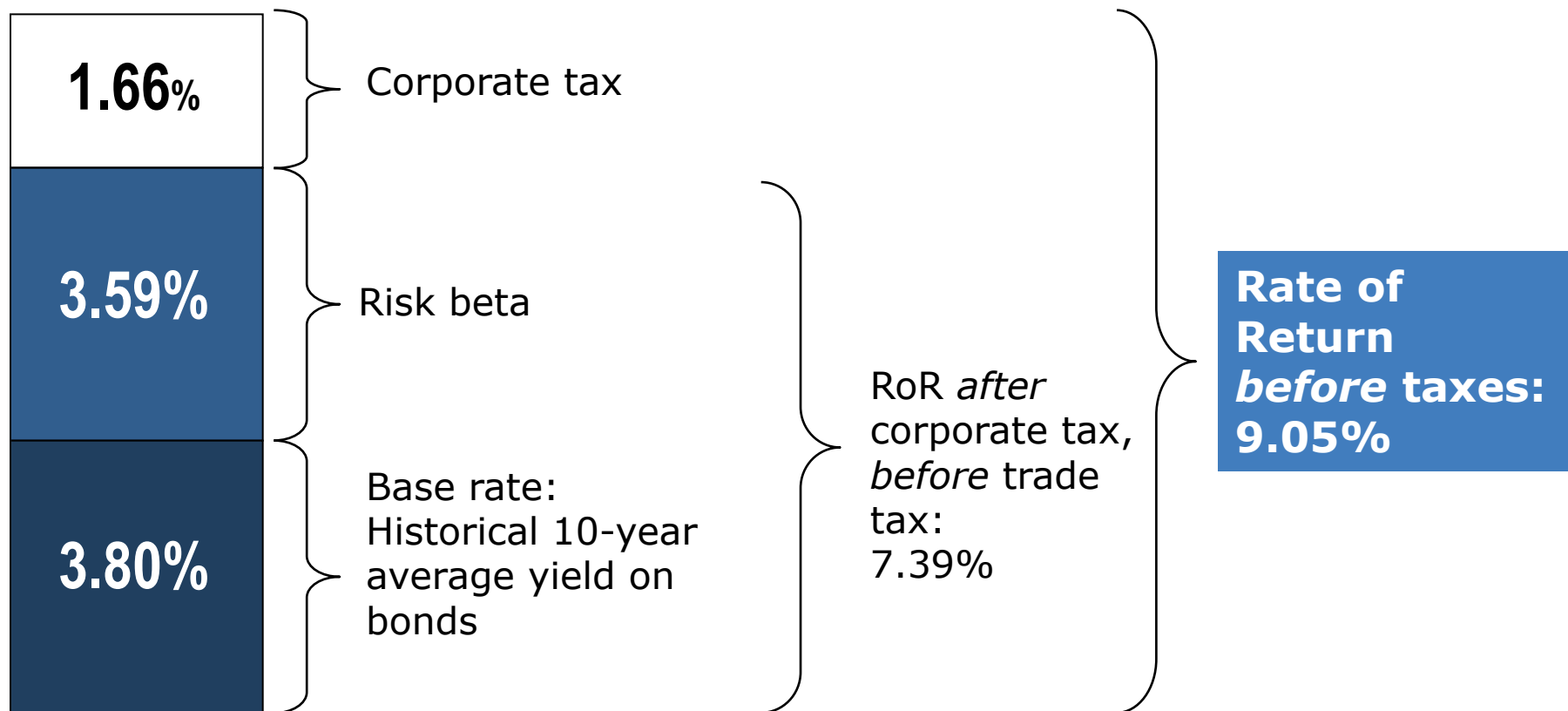
Capital Asset Pricing Model (CAPM)

Required return on equity = risk-free rate +

beta factor * market risk premium

$$R_E = R_F + \beta_E * P_M$$

Rate of return for the 2nd regulatory period



The full RoR is paid on up to 40% of the necessary assets.

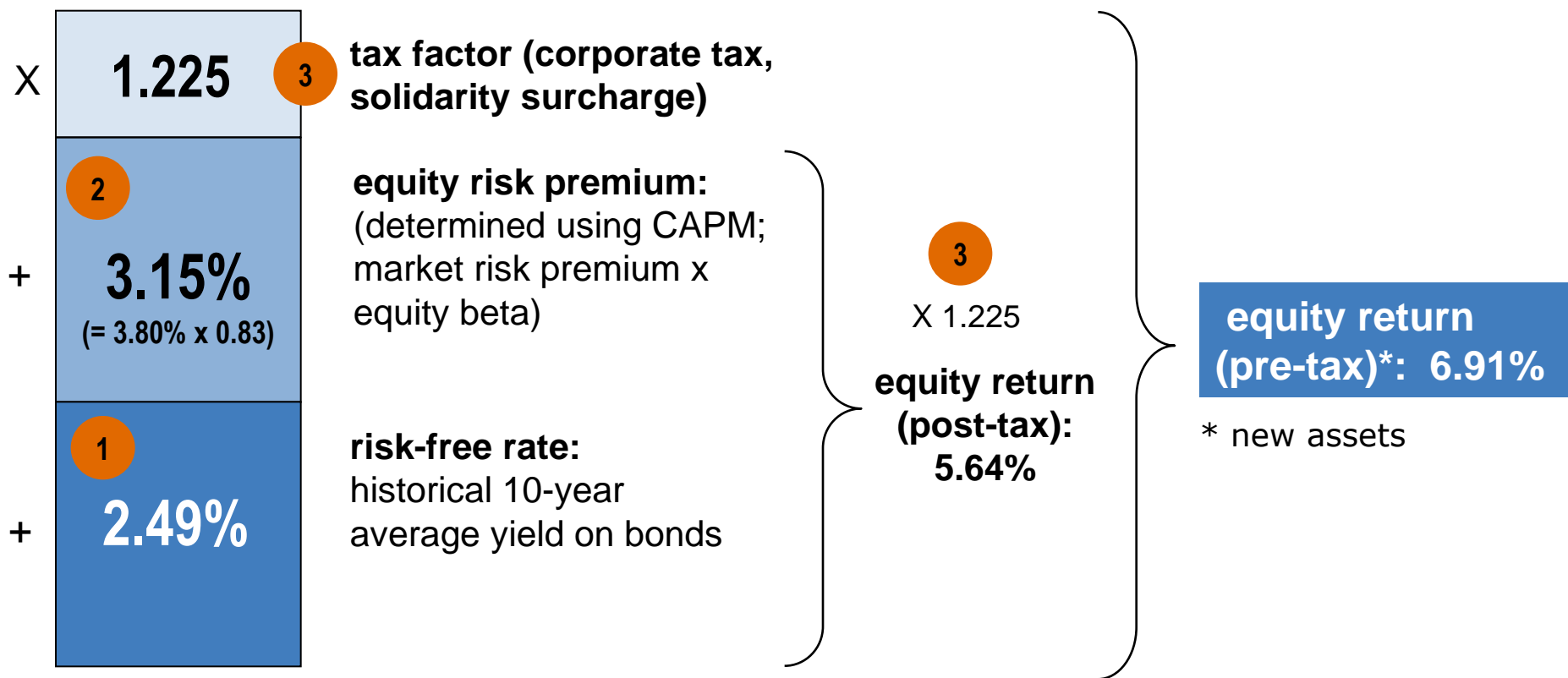
The regulated RoR on equity exceeding the 40% share is currently ca. 4 %.

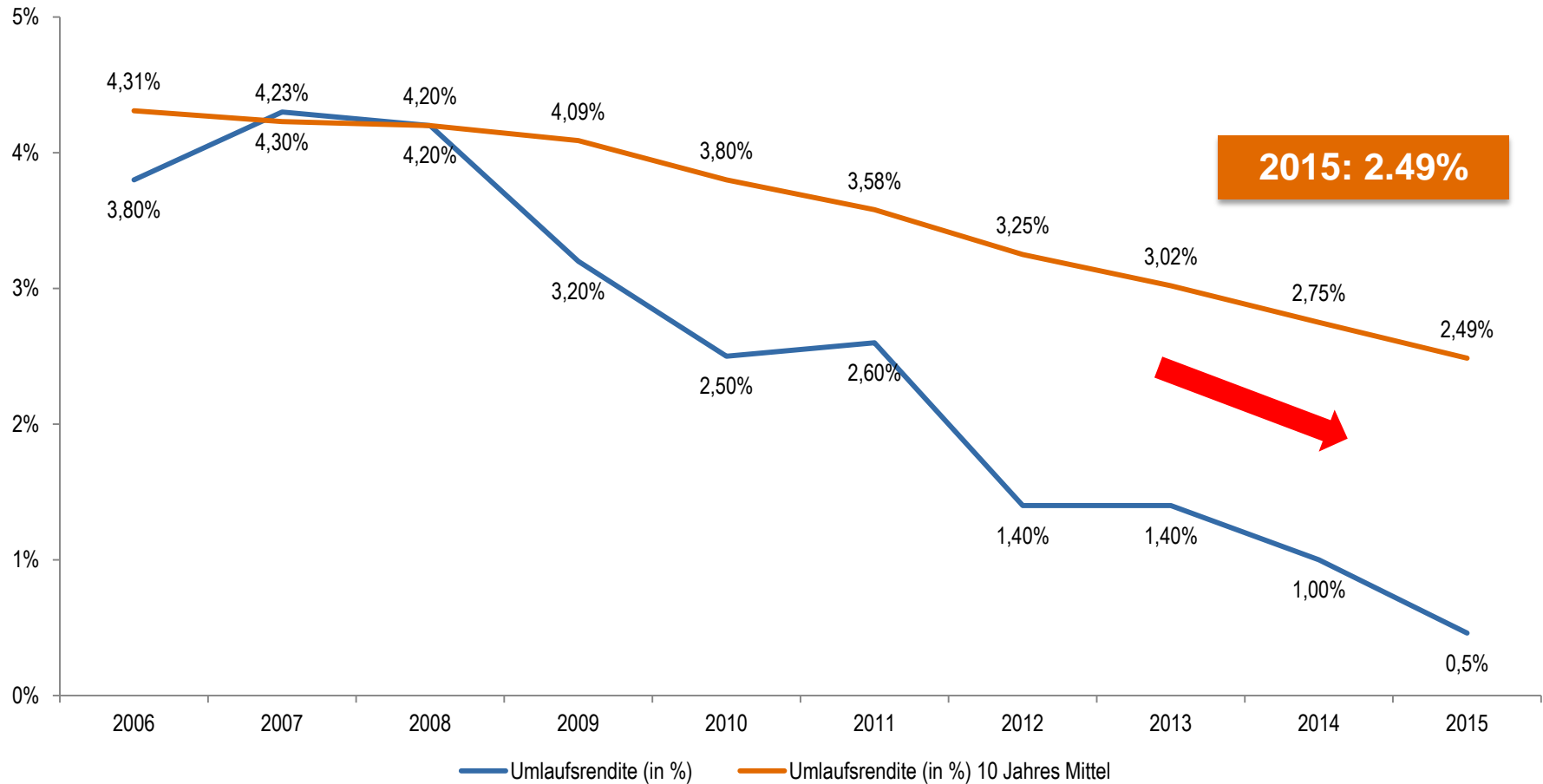
The cost of debt is passed through as long as it corresponds to current market rates (ca. 3%).

Decision of BNetzA was confirmed by the Court in Duesseldorf on 18 May 2017



The equity return is determined by the Ruling Chamber 4.
Determination from 05.10.2016 for the 3rd regulatory period.
Determination for electricity and gas.





Current average risk-free rate 2016: 0.25%



- equity risk premium = market risk premium \times β
- market risk premium (3.8%):
 - Premium on investments in a fully diversified portfolio
 - long-term time series over > 100 years
 - world wide approach (23 countries: AU, AT, BE, CA, CN, DK, FI, FR, DE, IE, IT, JP, NL, NZ, NO, PT, SA, RU, ES, SE, CH, UK, USA)
 - Determination as average of arithmetic average and geometric average based on the time series from Dimson/Marsh/Staunton
- β (equity beta = 0.83)
 - company specific risk
 - 14 network operators from 8 countries
- equity risk premium 2015* = $3.8\% \times 0.83 =$ **3.15%**

*equity risk premium 2007: 3.59%, 2010: 3.59%



- imputed taxes
- tax factor for corporate tax and solidarity surcharge **1.225**
- trade tax reflected in tax factor; considered as separate cost categorie in cost approval
- Comparison Rate of return on equity:

Asset type	Rate of return on equity for the 1 st period (before tax) 7 July 2008	Rate of return on equity for the 2 nd period (before tax) 31 October 2011	Rate of return on equity for the 3 rd period (before tax) 12 October 2016
New assets (activated as of 1 Jan. 2006)	9.29%	9.05%	6.91%
Old assets (activated until 31 Dec. 2005)	7.56%	7.14%	5.12%



Cost of capital: **investment value** is the basis for determining the monthly costs for the usage of the telecoms network infrastructure

Might be modelled on a bottom-up calculation (e.g. BNetzA)

This results in an average investment value per access line copper/ fibre

The definition of access may become more complex, when new unbundling technologies are available (e.g. unbundling of colours)

Should take new efficient infrastructure into account at an appropriate point of time (MEA = modern equivalent asset)



- **Cost of capital:** the investment value is the basis for determining the monthly costs for the usage of the (telecoms) infrastructure and is spread over the economic lifetime of usage of the assets (depreciation); it might be modelled bottom-up and should take new efficient infrastructure into account at an appropriate point of time (MEA = modern equivalent asset)
- **Return on investment:** to determine an *adequate* return on *capital employed* acc. to sect. 31.4 [32.3] Telecoms Act BNetzA takes into consideration *in particular*:
 - The capital structure (equity/debt ratio) of the SMP operator
 - The situation on national and international capital markets and their evaluation of the regulated entity
 - Requirements for the return on investment including the **risk** of the investment and specific risks of the capital employed [+ possible specific risks when rolling-out a NG network]
 - The long-term stability of the economic framework incl. the competitive situation of the telecommunications markets



The cost of capital is defined to be

- the weighted average cost of debt for the different forms of debt held by each operator
plus
- the cost of equity as measured by the returns that shareholders require in order to invest in the network, given the associated risks
each multiplied with the the shares of debt and equity
- The **rate of return on equity** reflects the **risks**:
 - Competition risk (losing customers to competitors);
 - Technological risk (e.g. more efficient technologies providing the same service (or a better quality) cheaper thus replacing current technologies (could be e.g. migration from copper to fibre lines);
 - Other risks (e.g. mis-forecasting the demand development)



Calculation without considering taxes:

$$\text{WACC} = \frac{R_E * E}{(D + E)} + \frac{R_D * D}{(D + E)}$$

R_E = cost of equity

E = total value of equity

R_D = cost of debt

D = total value of interest-bearing debt

Calculation when considering taxes:

$$\text{WACC} = \frac{R_E}{1 - t_E} * \frac{E}{(D + E)} + R_D * \frac{\text{Debt}}{(D + E)}$$

E/D = equity / debt ratio

t_E = taxation

The **Capital Asset Pricing Model** (CAPM) is used to calculate the risk factor when determining the cost of capital for equity (measuring the entrepreneurial risk). Long term government or company bonds are the basis for the risk free rate:

$$R_E = R_F + \beta_E * P_M$$

R_E = equity rate

R_F = risk free rate

β_E = risk of the regulated asset relative to market risk

P_M = market premium


BNetzA implements a basic constant annualisation formula

I = Investment at current costs (gross replacement value)

r = real WACC

T = economic live of the replacement asset

$$a = I_t \frac{(1+r)^T \cdot r}{(1+r)^T - 1}$$



Note: because of price changes and technical progress, BNetzA reevaluates the assets replacement value and the cost of capital in the next regulation period. The time span of the regulatory period in Germany is usually two years.

If a regulator decides on longer regulation periods, a tilted annuity adjusted for price evolution / technical progress might be better suited.



- ECJ ruling C-280/08 of 14 October 2010 confirmed the Commission's MS decision against DTAG applying a margin squeeze in fixed telephony markets, the ECJ confirmed the **EEO** test used by the Cion in its 2003 decision, the ECJ also confirmed that Art. 102 (ex Art. 82) is applicable in regulated sectors if the operator is dominant and has a room for action
- Along the same line the ECJ ruling C-52/09 of 17 February 2011 (TeliaSonera)
- Court of 1st Instance confirmed fine of Telefónica for the application of a MS in the Spanish broadband market in its rulings T-336/07 and T-398/07 (March 2012); confirmed finally by ECJ ruling C-295/12 P of 10 July 2014