Statements at the FSR-ETNO WACC-Seminar on 01/27/2022

Prof. Dr. Richard Stehle, Ph.D.

Prof. Dr. André Betzer

Berlin | Wuppertal January 2022

1. **The EU-wide harmonization of the WACC calculation in the telecom area based on the EU Notice, the SWD and the BEREC Documents has a solid foundation:**
   – regulation is based on the pre-tax WACC,
   – the (Sharpe-Linter) CAPM is used to estimate the cost of equity capital,
   – the estimate of the equity risk premium (ERP) is mainly based on the historical ERPs,
   – the data collected by Dimson/Marsh/Staunton (DMS) is used.

   • In Europe, these four major aspects of regulatory WACC setting are also used in the other areas of network regulation: electricity, gas, railroad infrastructure, airports etc. I do hope that we can all fully agree today,
   – that these four basic aspects should not be changed in the near future,
   – that the WACC should be estimated in all mentioned areas of network regulation in a similar way.

2. **When using the CAPM approach, a number of components have to be estimated.**
   In this respect, a number of good choices have been made, but there is room for improvement. I strongly feel that the EU Notice – the most important document – should be fine-tuned regularly in the coming years, after careful evaluations.

   • If the WACC harmonization works well in the telecom area, EU harmonization efforts will be welcomed in the other areas of network regulation – which I feel is highly desirable. If it doesn't work well, the other areas have a good reason to delay regulation at the European level.

3. **I would start by revising Point 27 of the Notice:**

- *"...the Commission considers it appropriate to use the same averaging period for all parameters."*

- Averaging is done for different reasons and the way it should be done also depends on the data: its characteristics and its availability. The proper averaging period is definitely not the same for all parameters.

  - **Beta** cannot be observed directly it must be estimated by an OLS regression. Typically, the relevant data is available on a daily basis at least for the last 10 years. Five years is a good compromise: If the true beta was constant, a longer averaging period would increase the statistical quality of the estimate but this is not the case, if the true beta changes over time.

  - **Debt premiums** can be observed directly, they also change in a minor way over time. An average is used to predict the future debt premium. For many bonds, data is available only for the past 4 – 8 years. Here also five years seems to be a good compromise.

  - **Risk-free rates** can be observed directly and data is easily available for many years in the past. They have been falling considerably during the last twenty years. Many local regulators are using average interest rates to create a stable economic environment for the network operators. I'll get back to this.

  - **The Equity risk premium (ERP)** cannot be observed. Stock index rates of change vary considerably over time, -50 to +100 % per year. When we use historic returns for estimating the ERP, we should use very long time series (50 years at least).

4. **Whether a five- or a ten-year average should be used to set the allowed risk-free rate for estimating the cost of equity capital is debatable.**

•   The Notice prescribes a five-year average. We are in favor of leaving this choice to the local regulators, because a ten-year average may help to increase regulatory predictability in the value of the parameters over time (see Notice, point 8). In some countries (e.g. Germany) a stable economic environment for the network operators is required by the local telecom law. In some other countries, a stable economic environment may not have the same importance. In other areas of network regulation, ten-year averages are also often used.

•   An important point is, that this is a long-term decision of the regulators, the length of averaging period should not be changed, when interest rates increase again. When it is done in this way, the increase of the average when rates are falling is nearly equal to the smaller increase, when rates are rising, so in the long run, network operators do not profit at the expense of their customers. (*See Stehle/Betzer* (*2021b, Appendix D*) for a simple numerical example).

5. **At present, a ten-year average is a 'must' when setting the cost of debt for a network operator that has debt with an average time to maturity of more than 10 years.** To me, this seems to be the case for several large operators. 20-year bonds and a five-year average do not fit together at all, when bond interest rates have been falling considerably for at least 20 years. (See *Stehle/Betzer* (*2021b, Appendix G*) for the debt structure of Deutsche Telekom AG).

6. **A very controversial point in the Notice is # 34: "Government bond yields are likely to reflect appropriately the respective domestic RFR.** The Commission considers that the use of domestic government bonds, together with a consistent methodology, will ensure that differences in RFRs reflect actual differences in financing conditions between Member States."

• This is economically one of the most important points of the Notice: Whether the risk-free rate is set at 1 or 2 % is much more important than whether the beta is .7 or .8. # 34 should be made much more precise in the near future: *What is a consistent methodology for the RFR exactly?*

• According to the Notice in its present form, a BBB rated network operator residing in an A rated country will enjoy a considerably higher allowed WACC than an operator with the same rating residing in a triple A or double A country. Probably both can issue bonds under very similar conditions.

Brief remarks on other WACC components:

7. **It is very difficult to estimate the ERP precisely.** In our judgement, the ERP estimate of BEREC (5.5 %) is a bit too high, but this is a price that we should be willing to pay for having an EU wide regulatory approach in the area of telecom legacy networks. Only very few financial economists currently think that the European ERP based on bonds (not bills) is higher than 5.5 %. We currently estimate that the European ERP based on bonds is 4 %. We use the Dimson/Marsh/Staunton data as the most important input. This data set was also used by Frontier Economics in their WACC-report for the BNetzA regulation area electricity and gas, dated July 2021. They estimated that the ERP is 3.7 %. After a careful analysis the BNetzA used this estimate in their decision BK4-21-055 (Oct. 12, 2021, page 13).

8. **I am strongly in favor of paying more attention to dividend discount models.** According to our – possibly incomplete – review, the most popular dividend discount model in regulatory proceedings is currently the model proposed by Fama/French (2002), see e.g. Ofcom Wholesale Fixed Telecoms Market Review 2021-26, WFTMR 2021, A20.66-A20.70.

• The dividend discount models currently used by central banks give a very clear picture of the change of the ERP over time, but their estimate of the current level of the ERP is definitely too high. Stehle/Betzer (2021a) contains our present view of the various central bank models. A provisional translation of its summary will hopefully become available soon.

9. **André Betzer and I would enjoy to work on the improvement of dividend discount models.** Normally we do only reports for regulators, but in this case we would make an exception. However, we would insist on publishing the results in a way easily accessible to other academics. Our estimate of concluding that the risk-free rate is considerably higher than 4 % is less than 50 %.

10. **The fraction of equity finance (60 %) is also a bit too high.** In the German regulation of electricity and gas, by law, 40 % of equity finance is the upper limit.

11. **Quantitative Easing programs of central banks have had an influence on bond yields, but it's unclear, to what extent.** Bond yields are determined in huge financial markets, which central banks can only influence in a minimal way. We strongly believe that regulators should not make an upward adjustment to observed bond yields because of QE. And we strongly believe that the ERP was not increased by QE. Possibly, it was decreased.

I.   Bibliography:

- **Stehle, R./Betzer, A. (2021a):** Wissenschaftliches Gutachten zur Analyse der Zentralbanken-Ansätze zur Determinierung von Marktrisikoprämien, im Auftrag der Bundesnetzagentur, Mai 2021.
  https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Netzentgelte/Anreizregulierung/Gutachten/GutachtenMarktrisikopr%C3%A4mien.pdf?__blob=publicationFile&v=2

- **Stehle, R./Betzer, A. (2021b):** Wissenschaftliches Gutachten zur Höhe des risikofreien Zinssatzes bei der Ermittlung der Eigen- und der Fremdkapitalrendite in der Entgeltregulierung im Telekommunikationsbereich, im Auftrag der Bundesnetzagentur, August 2021.
  https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Telekommunikation/Unternehmen_Institutionen/Marktregulierung/Massstaebe_Methoden/Kapitalkostensatz/Gutachten_2021.pdf?__blob=publicationFile&v=2
- *English version:*
  https://www.bundesnetzagentur.de/EN/Areas/Telecommunications/Companies/MarketRegulation/CostOfCapital/costofcapital-node.html

Additional remarks, possibly in the discussion:
- **The British National Audit Office Report** dated January 30, 2020, stated that 'aiming up' was a common practice in the 'good old days', but concluded "Ofgem no longer considers aiming up to be necessary, because of increased evidence that investors will accept lower returns than have   traditionally been allowed" (Point 2.14 on page 36)
  https://www.nao.org.uk/report/electricity-networks/