

Mainstreaming of Climate Risks and Opportunities in the Financial Sector

Bayesian Risk Analysis and Corporate Valuation

Electric Utilities at Risk

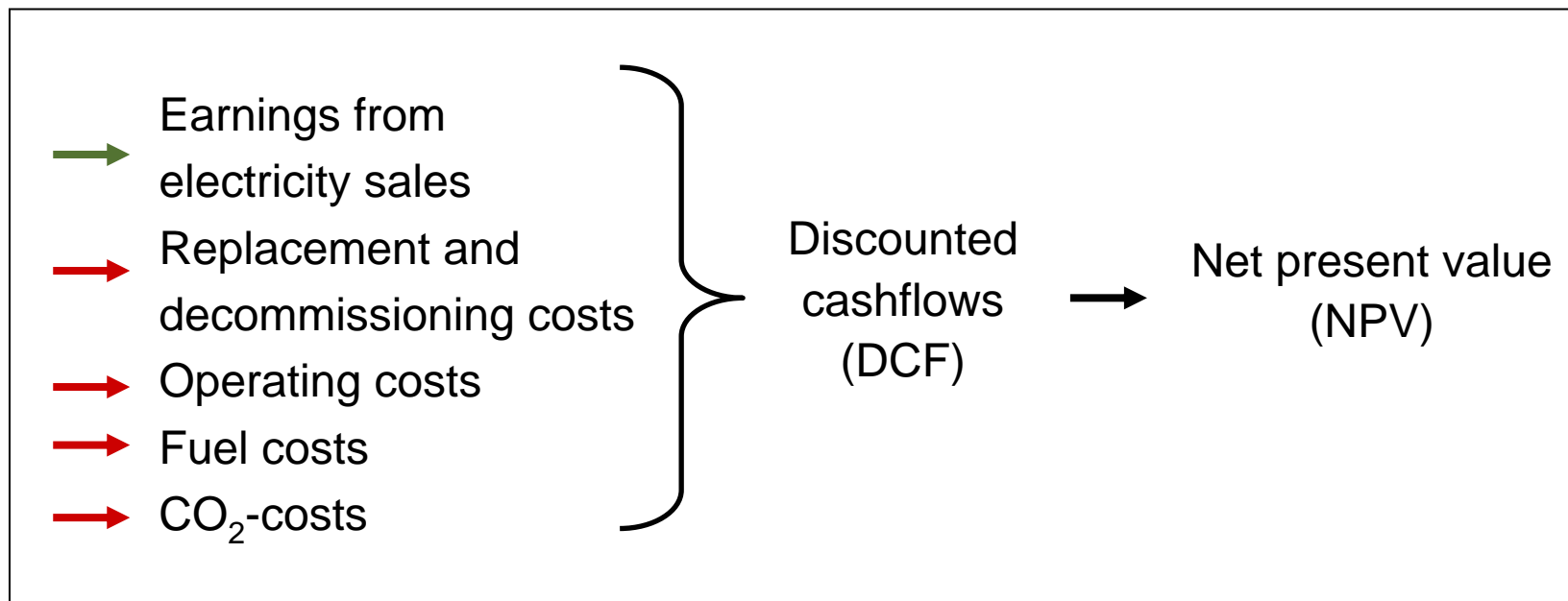
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>> Overview <<

1. Starting point:
Valuation model for electric utilities
„Carbonizing Valuation“ SAM/WWF-Study (11/2006)
2. Tackling regulatory risks:
Corporate valuation using
Bayesian Risk Management

>> Valuation Model for Electric Utilities According to
„Carbonizing Valuation“ SAM/WWF-Study (11/2006) <<

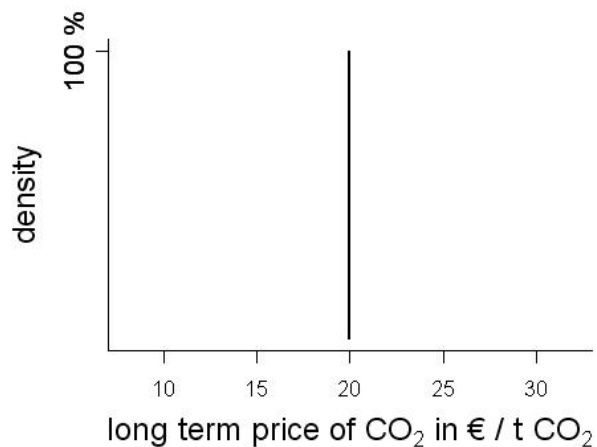


Challenge: Integration of regulatory risks into the model!

(Carbonizing Valuation - Assessing Corporate Value at Risk from Carbon. SAM Study, 2006)

>> The Bayesian Approach to Regulatory Risks <<

Conventional approach

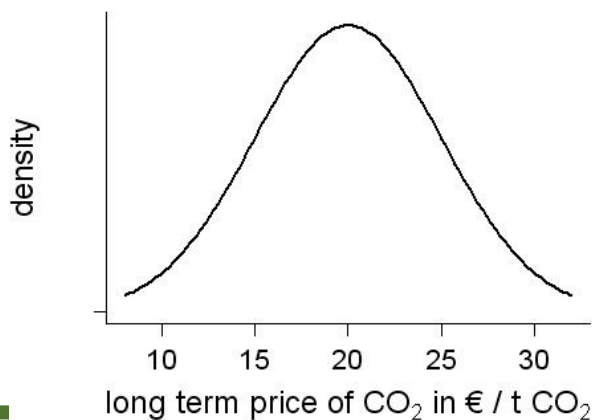


Fixed
impact factors



- uncertainties are not included
- corporate value is deterministic
- risks can hardly get integrated into existing models

Bayesian approach



Stochastic
impact factors



- uncertainties are included
- corporate value is stochastic
- risks are integral part of the model

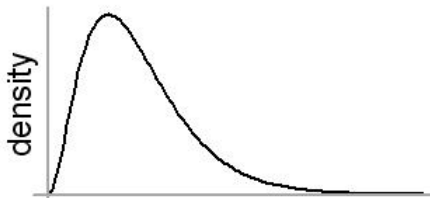
>> Derive Risk Measures from Knowledge Based Probabilities <<

Various uncertain factors affect corporate value:



Impact factor X_1

continuous



Impact factor X_2

continuous



Impact factor X_3

discrete

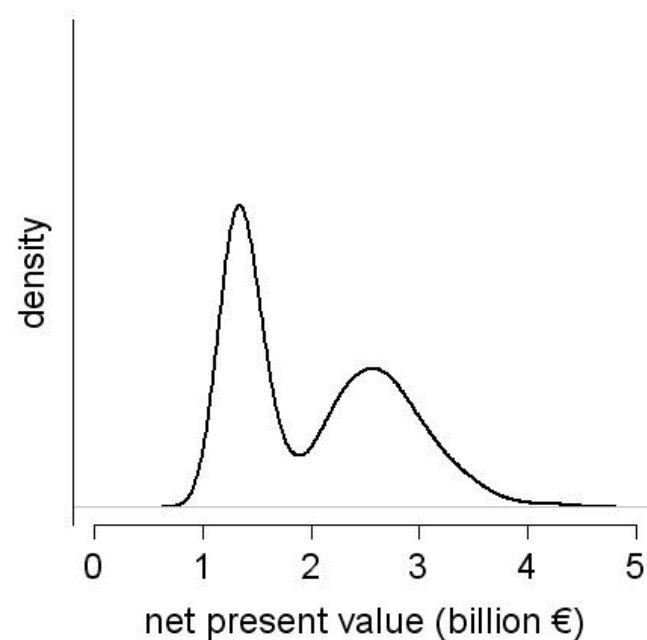
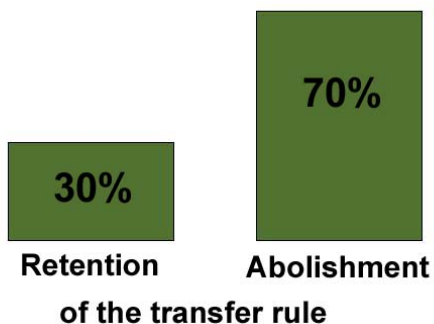
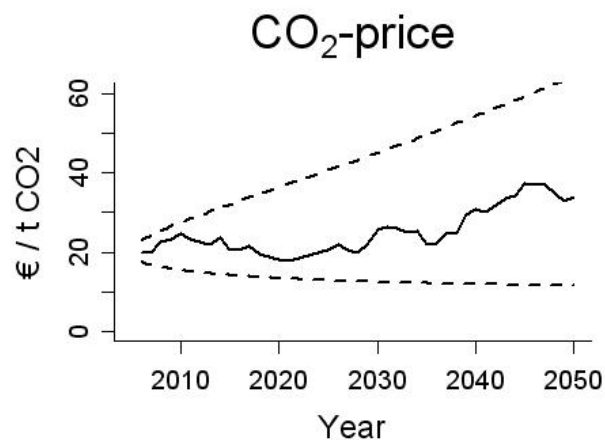


$NPV(X_1, X_2, X_3)$

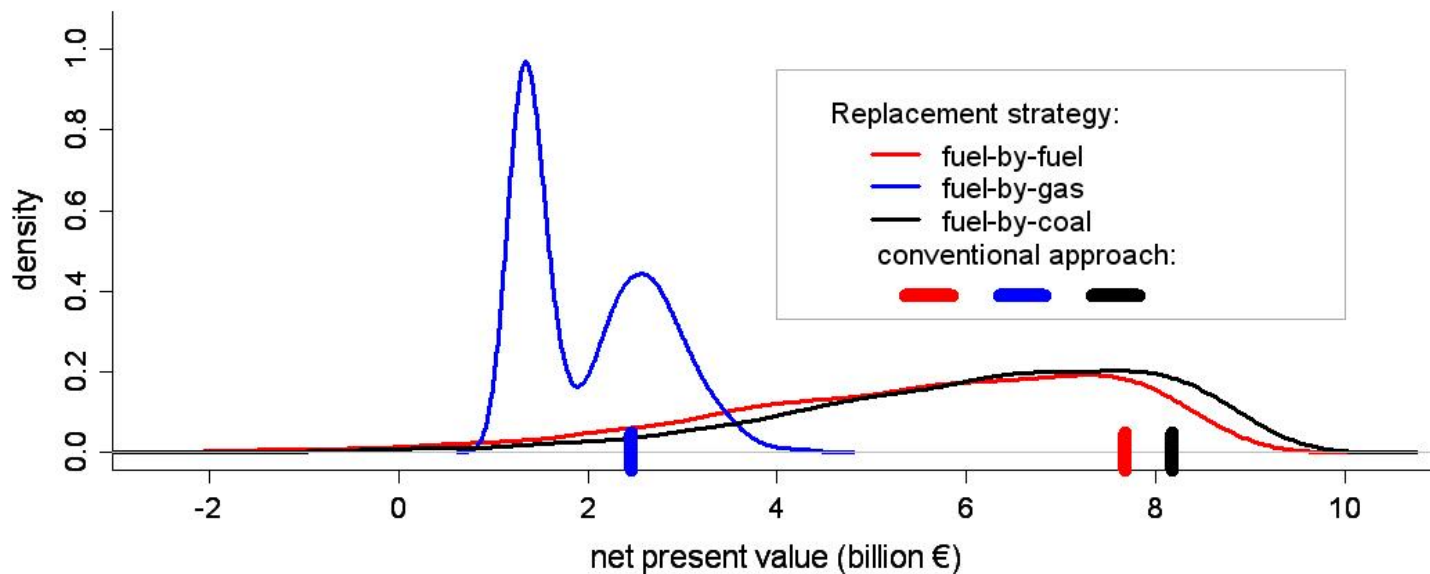


- Expected Value
- Variance
- Value at Risk
- etc.

>> Corporate Value at Regulative Risk: Uncertain CO₂-Prices and the Challenge of the Transfer Rule <<

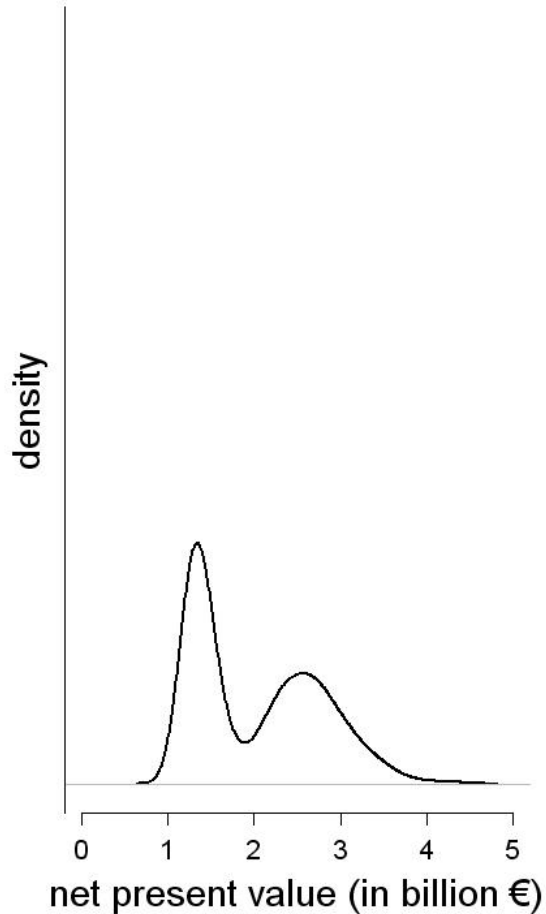


>> Corporate Value at Regulative Risk Comparison of Replacement Strategies <<



- Gas replacement strategy has less probability mass on higher corporate values
- High variability for fuel-by-fuel and fuel-by-coal replacement strategy → high regulative risk!

>> Regular Update of Knowledge Based Probabilities <<



Expert judgement
on policy process

➔

probability of
abolishment ~ 99 %



>> Bayesian Risk Management <<

- Risks and opportunities are completely described by **probability distributions**
- Targeted use of **expert knowlegde**
- Highly flexible and practical approach to probabilities allows appropriate valuation of **regulative risks**
- Integration of **Bayesian** methods in existing analysis and valuation processes

>> Thank You for Your Attention! <<

<http://www.climate-mainstreaming.net>

Contact

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