



BERNSTEIN

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Using scenarios to inform financial planning and asset pricing

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Deepa Venkateswaran, ACA • Senior Analyst • +44-207-959-4915 • deepa@berstein.com

Introduction



- **Deepa Venkateswaran, ACA (Senior Analyst)**

Deepa joined Bernstein from McKinsey & Company where she was a Junior Partner in the London office serving clients in the European Power and Utilities sector and a member of the leadership team in McKinsey's Utilities & Regulatory practices.

She has deep knowledge of the entire power and gas value chain built-up during the course of serving leading players on topics of strategy & growth, corporate finance and regulation over 7 years. In the last few years, she focussed significantly on regulation of power markets (across Europe) supporting players and think-tanks on the optimal regulatory posture and reform required in the face of the evolving dynamics in the European power sector. Deepa has an MBA (Distinction with concentration in finance) from London Business School. She also qualified as a Chartered Accountant with Arthur Andersen.

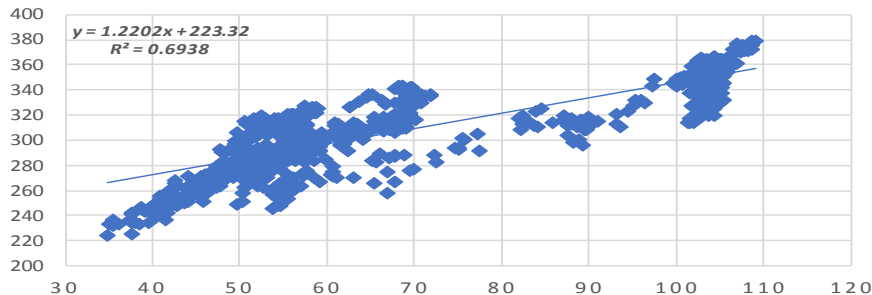
Key topics I will cover

- Asset Pricing
- Scenario analysis – Commodities, Demand
- Capital allocation:
 - Investors
 - Companies

Asset Pricing: Financial markets are short-term – Asset valuations typically follow the path of the ‘spot’ commodity outlook

European Oil & Gas index

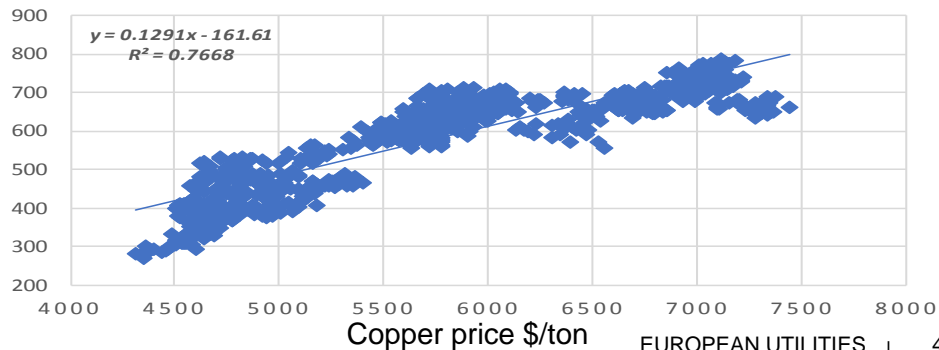
OIL & GAS VALUATION CORRELATION TO OIL PRICES



Oil price \$/ton

MINING SECTOR VALUATION CORRELATION TO COPPER PRICES

European Mining index



SOURCE: Bloomberg, Bernstein analysis
Note: Analysis from 2014 to 2017 (YTD)

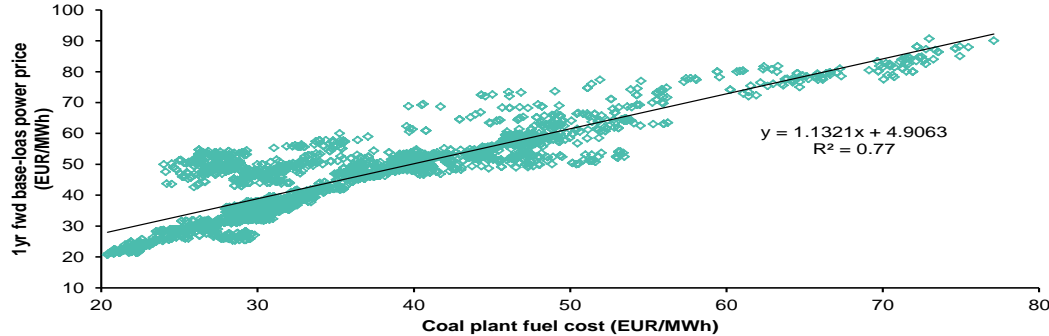
How investors use scenarios

- Base, Bull and Bear cases for valuations on key sensitivities
- Companies also use scenarios in evaluating investment decisions
- The Base case is likely to be anchored to the present (\$50 oil vs \$75 oil)

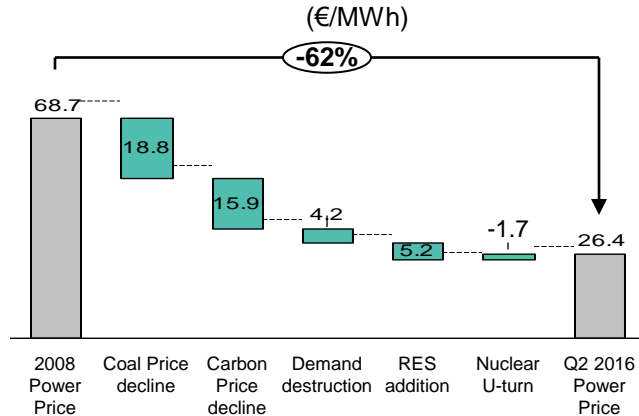
Decline in German power prices is primarily attributable to the fall in commodity prices : coal and carbon

German power prices are set by coal

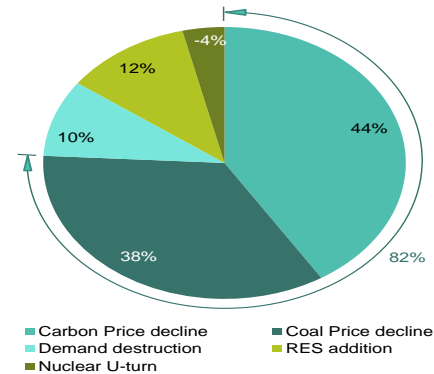
1-year forward wholesale power price correlation to 1-year forward coal and carbon price (2008-2016)



Decomposition of German power price decline 2008-16

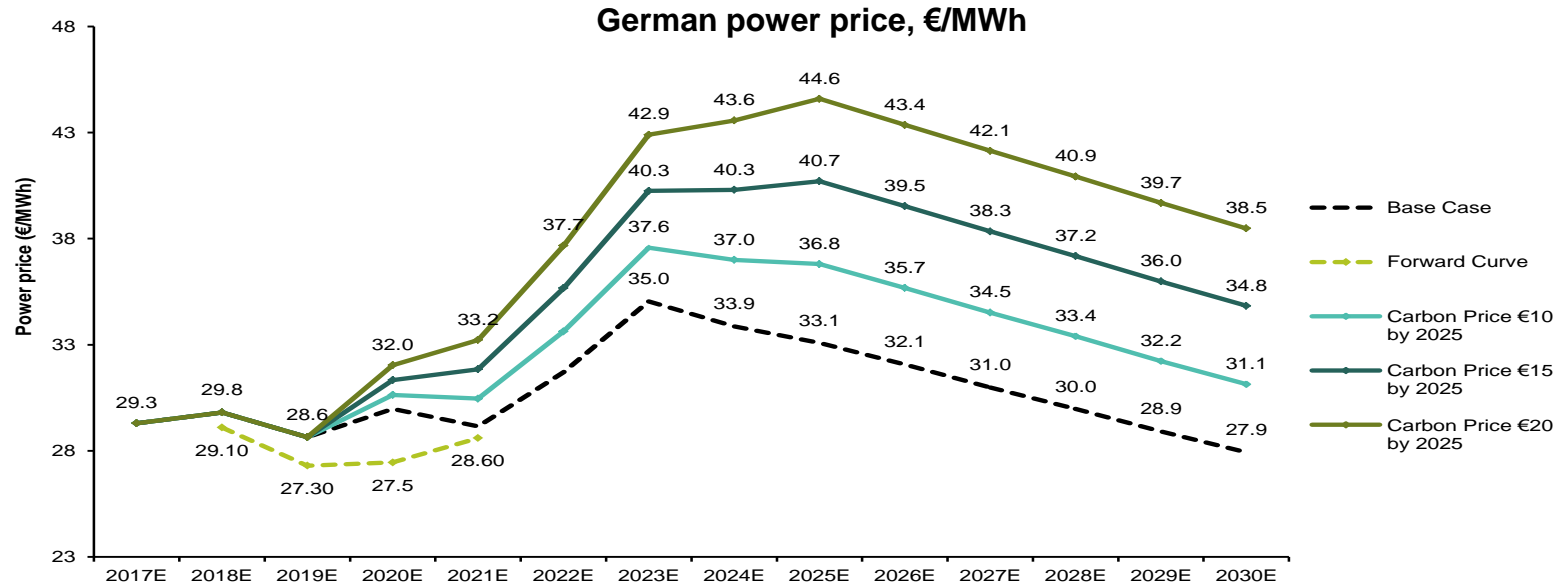


Lower commodity prices – key driver of power price decline 2008 - 16



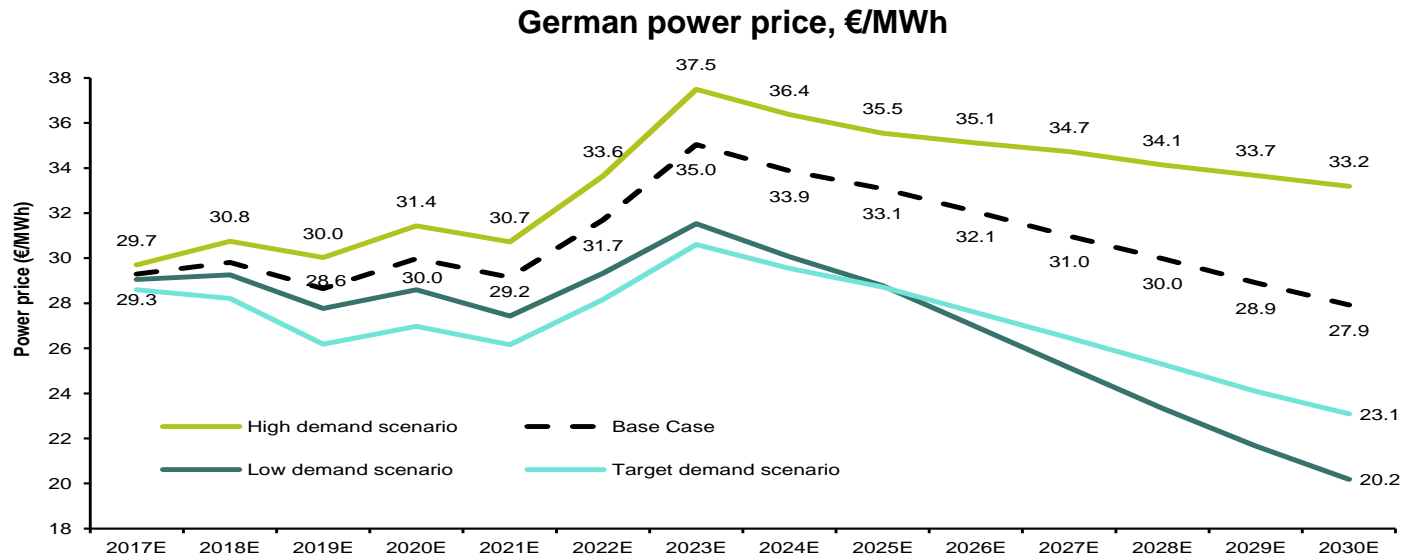
Source: Bernstein proprietary power model; Bernstein analysis

Scenario analysis example – Carbon - Power price forecast to 2030 (1/2)



Carbon scenarios	
Carbon €20	Increased from forward curve in 2019 to €20/t by 2025; held constant thereafter
Carbon €15	Increased from forward curve in 2019 to €15/t by 2025; held constant thereafter
Carbon €10	Increased from forward curve in 2019 to €10/t by 2025; held constant thereafter
Base Case	Assumed to be in the range €5-5.3/t between 2020-25 and increasing to €5.7/t till 2030

Scenario analysis example – Demand - Power price forecast to 2030 (2/2)



Demand scenario	2017-2019	2020-2025
Target demand	-2.0%	0%
Low demand	-1.0%	-0.5%
High demand	0.25%	0%
Base case	-0.5%	0%

Capital allocation – companies in the utilities sector



Cleaned up its act by spinning off its 'dirty' generation subsidiary in 2016. Capital allocation focussed on networks and renewables



The energy to lead



IPOed its 'clean' non-generation subsidiary in 2016 to raise new capital, focus capital allocation and give investors a route to invest in the 'clean' portion



Sold Oil & Gas division and committed to a 2023 coal phase-out in 2017. Now a pure play Renewable company



Portfolio rotation programme since 2016 to reduce exposure to commodity prices – Oil & Gas, select power generation assets (inc. Coal)



Capital allocation – investors

Divestments/ Exclusions for high GHG risk companies



Environmental investments

Risk-based divestments in 2016

Category	Theme	2016
Greenhouse gas emissions	Oil sands production	3
	Coal-fired power generation	1

Environmental investments

Environmental mandates¹

Main category	Subgroups	Number of companies	Total (billion kroner) ²
Low-emission energy & alternative fuels	Renewable energy	45	5.22
	Low-emission energy	11	11.50
	Low-emission fuels	8	1.08
Clean energy & efficiency technology	Electricity production	1	0.16
	Transport	34	5.26
	Buildings	24	7.41
	Industry	43	9.85
	Water	35	8.67
Natural resource management	Waste management and emissions reduction	16	5.35
	Sustainable agriculture	9	2.35



Climate Change Risk assessment of the portfolio

Climate change

We expect companies to analyse how their operations are affected by climate change and to develop plans and targets to address climate change risk. We have assessed companies exposed to climate change risk since 2010.

