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DFBEW - Offshore-Windenergie in Deutschland und Frankreich

Financing renewables in the age of falling technology costs

Dr. Jörn C. Richstein, based on work with Dr. Nils May and Prof. Karsten Neuhoff, PhD

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Introduction

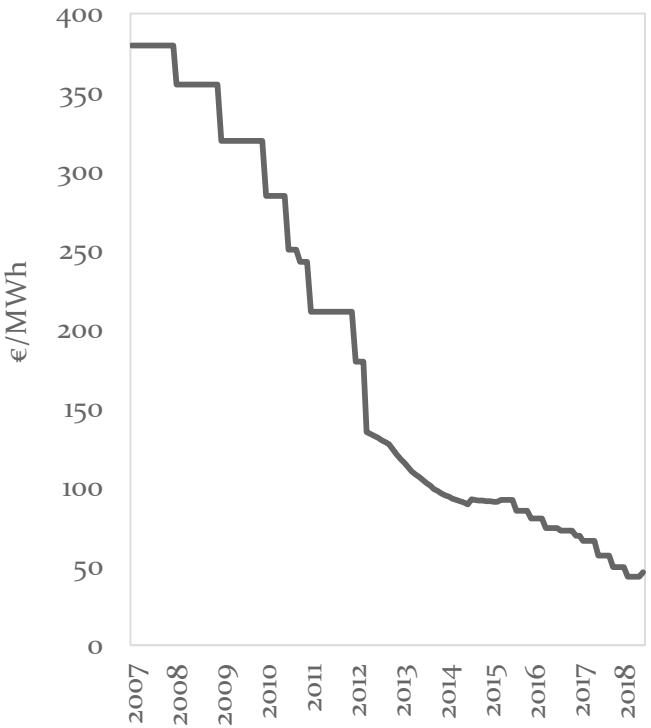
Renewables generation costs are fast approaching (or falling below) wholesale power market prices.

This of course raises the following questions:

- Do we still need renewable policies?
- And what form and role should they take, if the answer is yes?

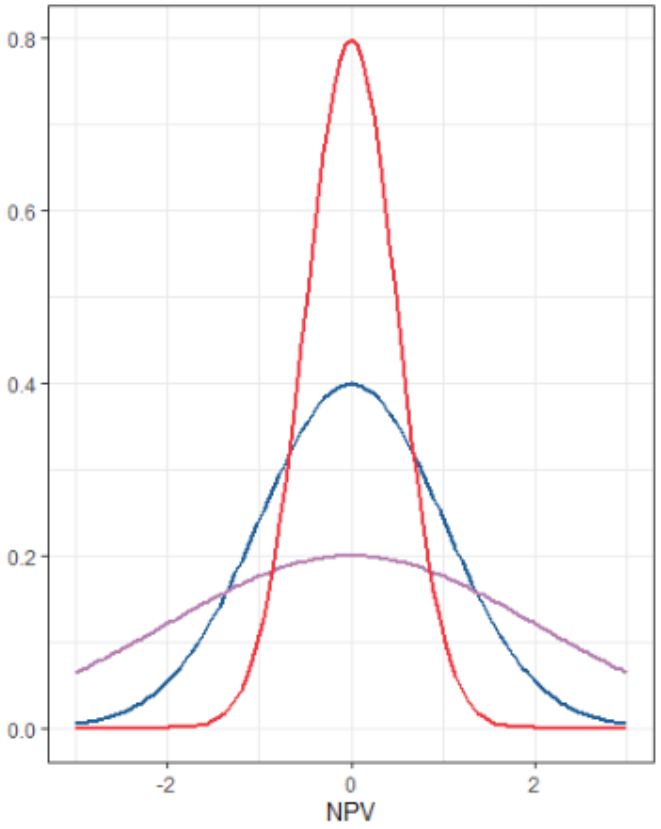
So what do (did) renewable policies do (financially)?

They subsidise(d)



Remuneration levels of large-scale PV plants in Germany (Based on IWR, 2018 and Bundesnetzagentur, 2018)

They provide risk mitigation against market and regulatory risks



Illustrative depiction of normally distributed NPVs

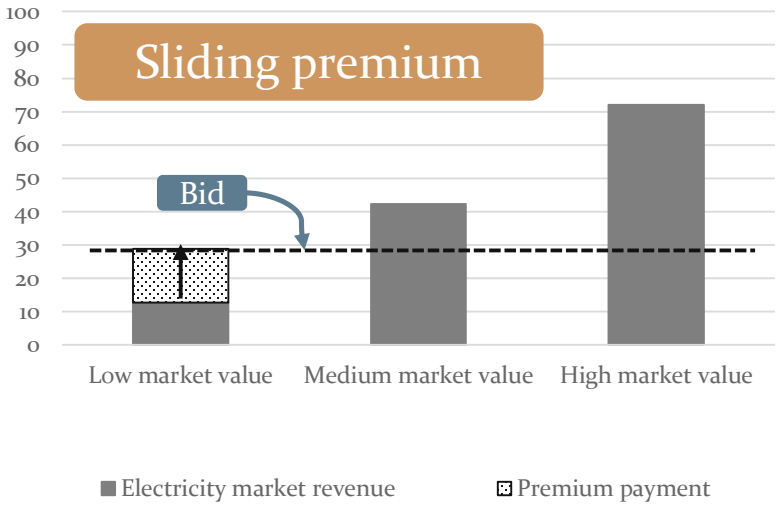
We compare 4 different policies

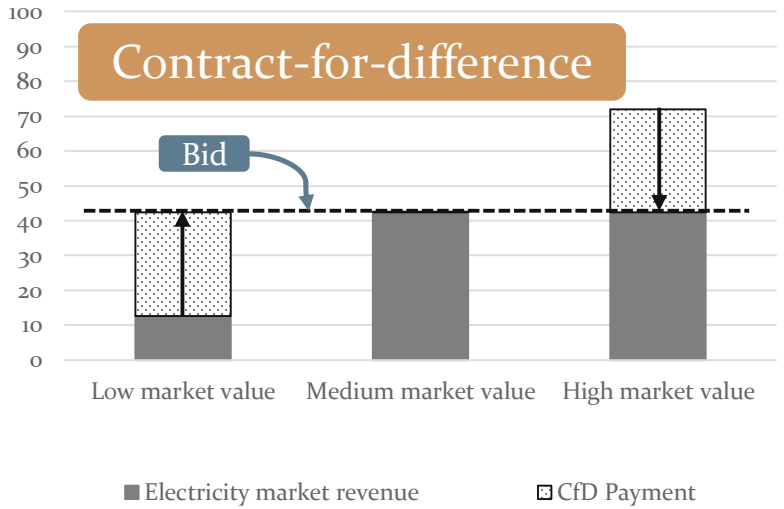
Bid ≠ Cost

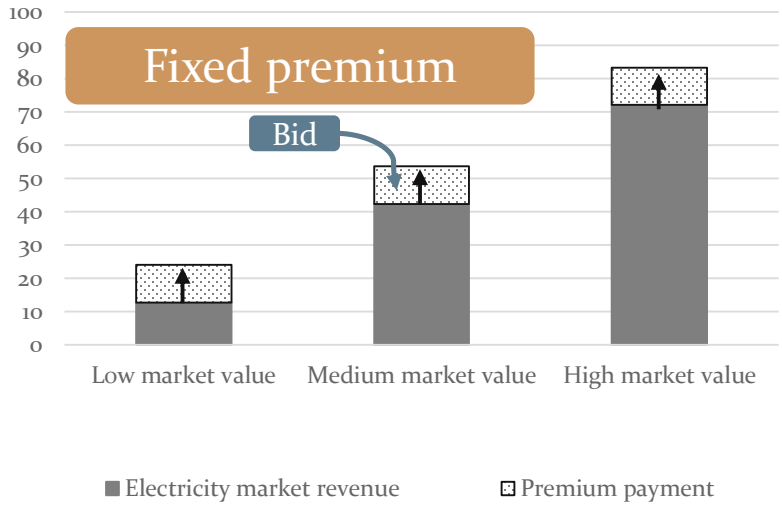
&

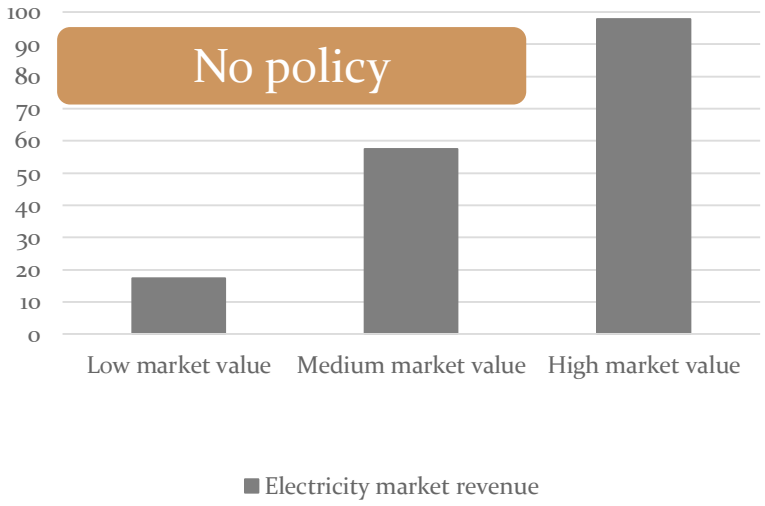
Bid ≠ Revenue

(except CfD)

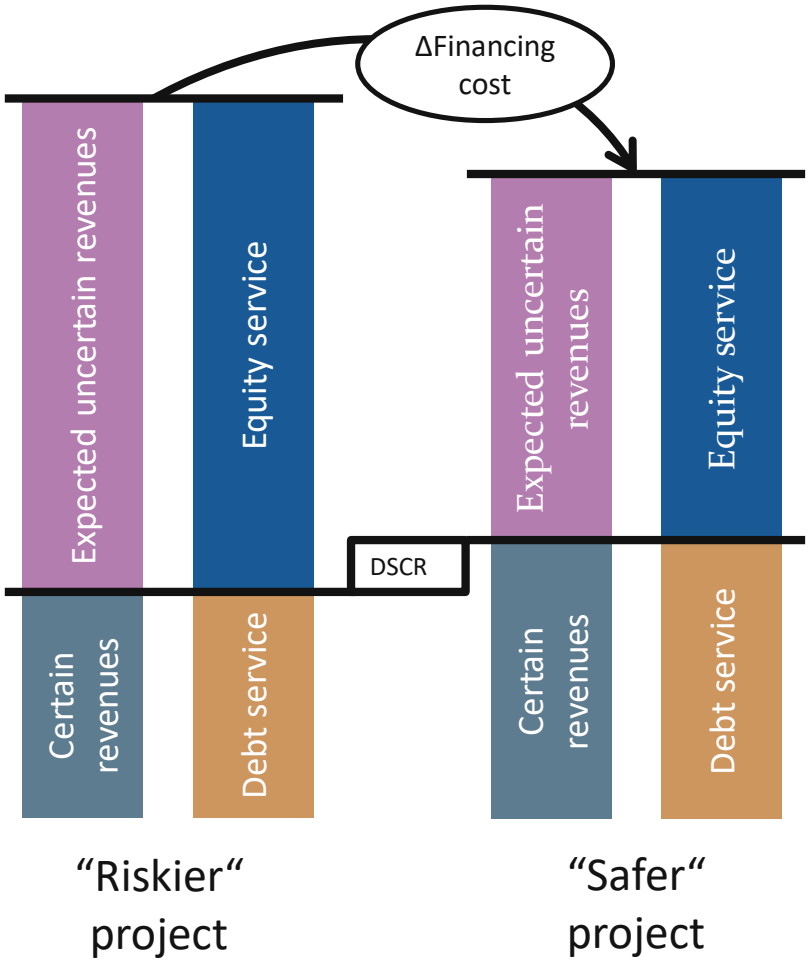








Estimation of financing costs under the different schemes



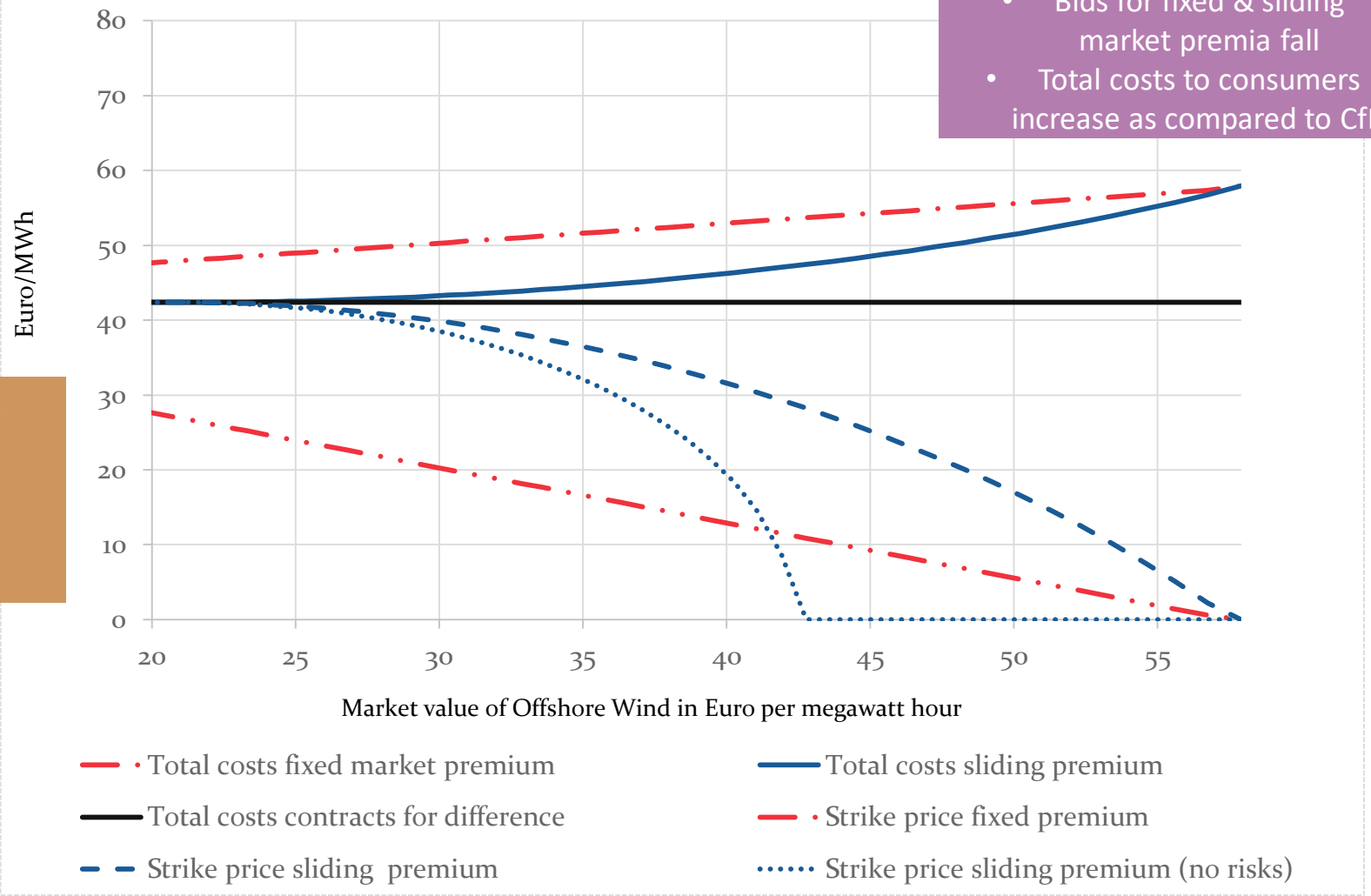
- Policies differ in shares of market revenues & expectation and worst-case revenues
- We assume project finance*
- Only secure revenues can be utilised for debt (**DSCR**); everything else needs to be equity financed
- Equity has higher costs than debt (e.g. 7% vs 2%)
- Auctions lead to competitive pressure of lowering bids

* in the past accounted for >50% of offshore projects, (Steffen, 2017 & pwc, 2020) good proxy for project-specific risk also in corporate finance

Two lenses: increasing expected market revenues

Market value increases →
- Bids for fixed & sliding market premia fall
- Total costs to consumers increase as compared to CfD

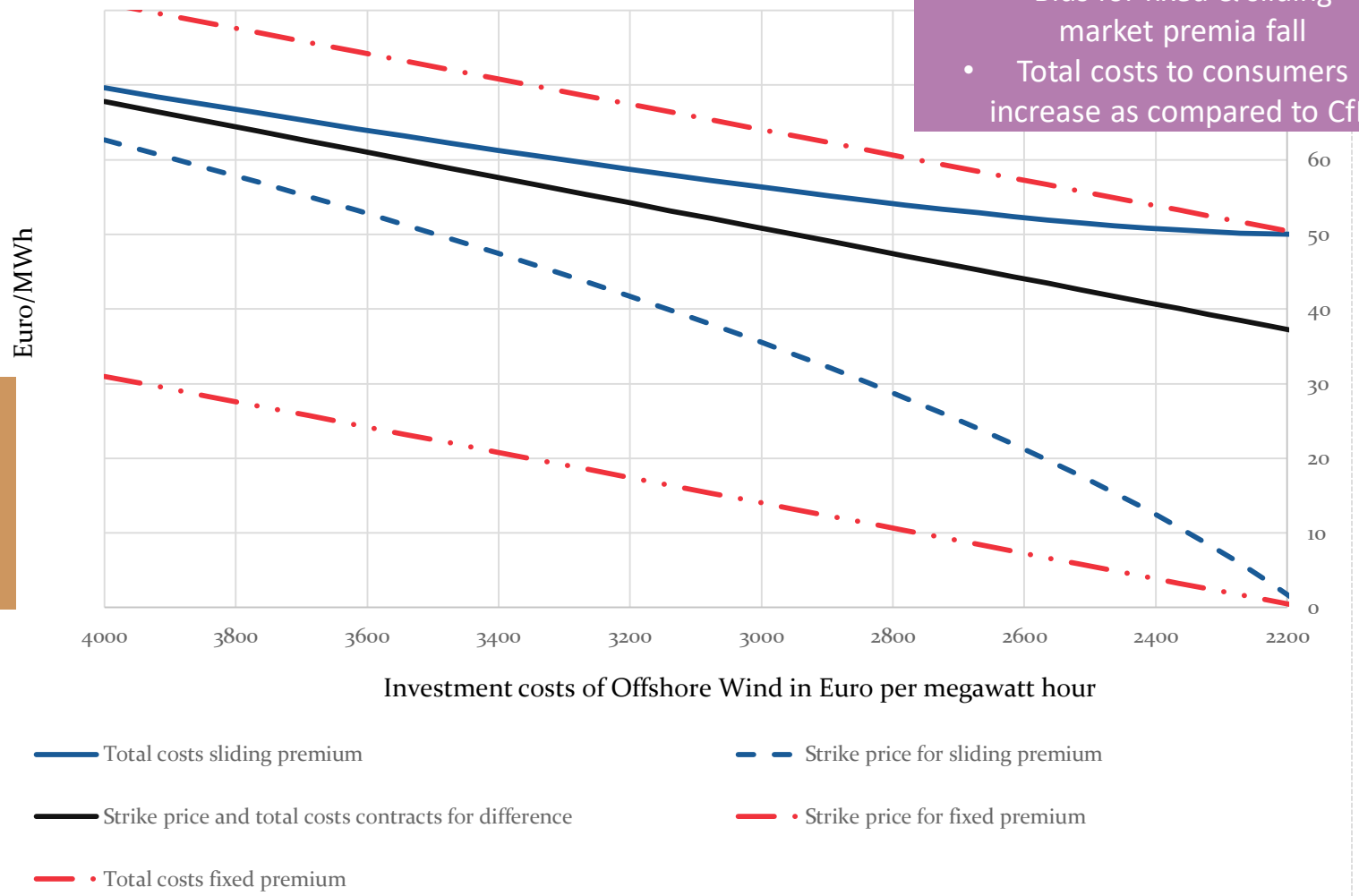
Total costs to consumers
=
Power prices
+
RES policy



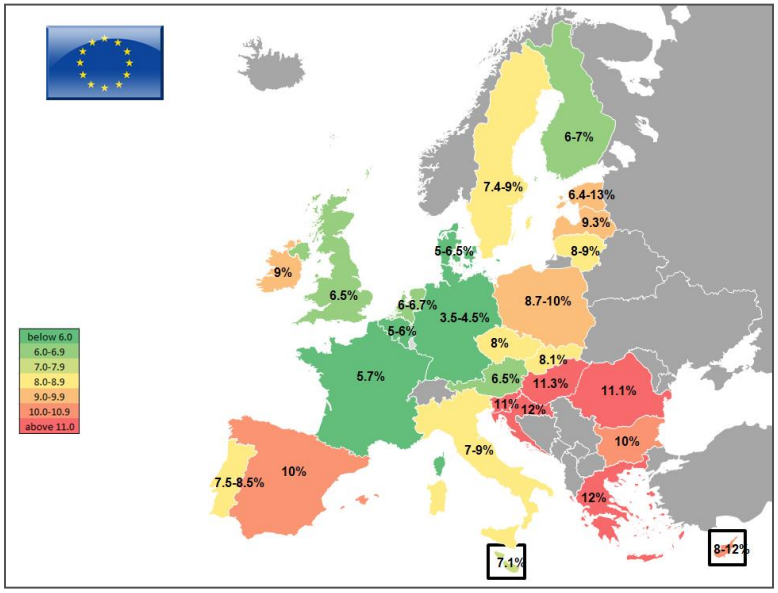
Two lenses: falling technology costs

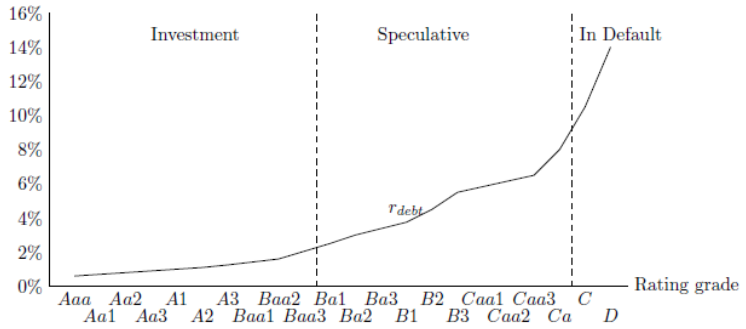
Technology costs fall →
- Bids for fixed & sliding market premia fall
- Total costs to consumers increase as compared to CfD

Total costs to consumers
=
Power prices
+
RES policy



What is the effect of derisking in other studies?



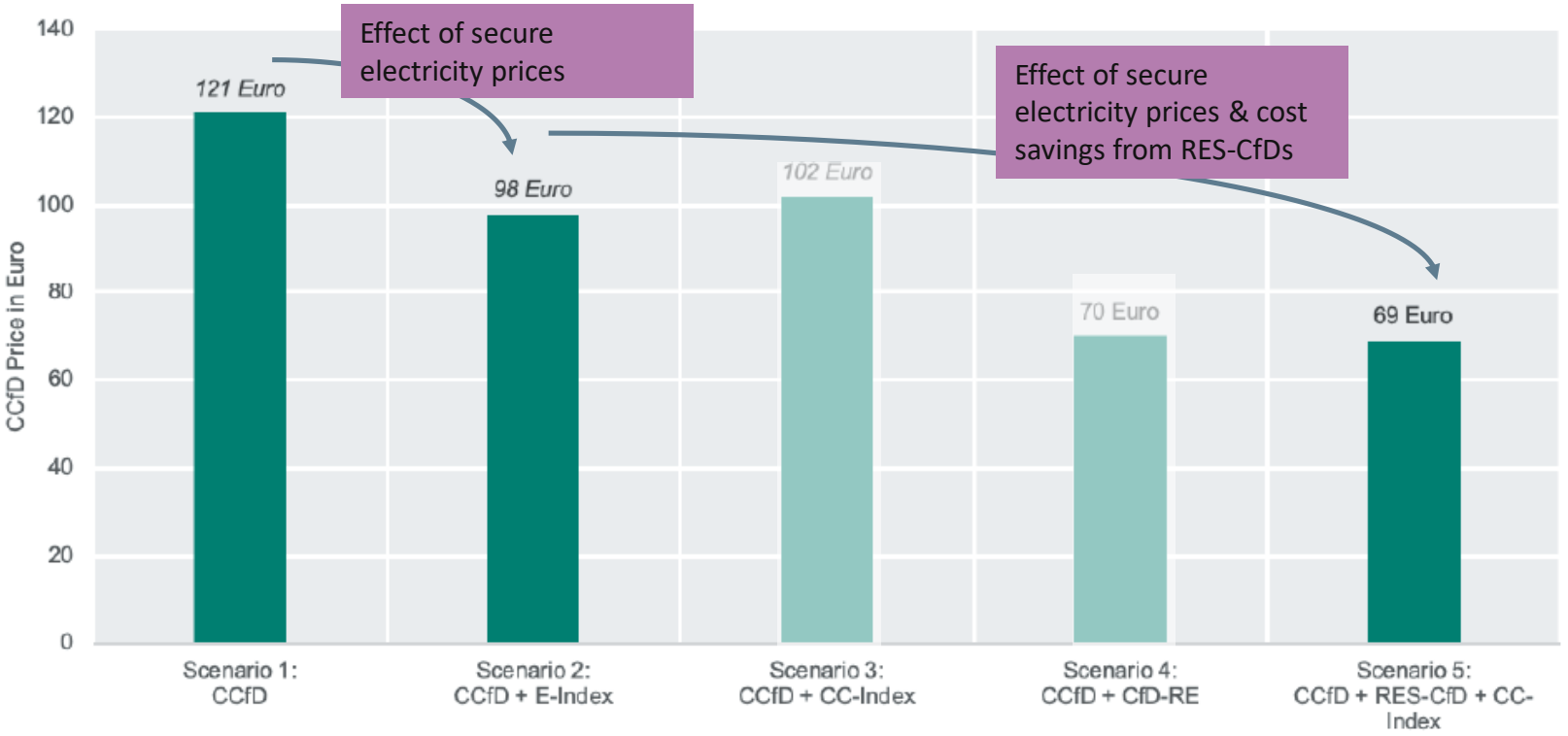


- Full power price exposure increases financing costs *of project developers* by 1.2%
- However, in such environments market risks are already (partly) passed on to long-term offtakers (PPAs)
- This is by credit rating agencies counted as imputed debt, raising financing costs

→ together these effects cause 30% higher costs (May &Neuhoff, 2021;

- Industry analysis arrives at similar figures (Aurora Energy Research, 2018 & Arup, 2018)

What is the effect of lower and secure electricity prices on industrial decarbonisation?



- Low electricity prices essential for electrification and decarbonisation of industrial sectors
- Bases on study on Carbon Contracts for Difference for hydrogen steel making (Richstein et. al., 2021)

Conclusions

- The major role of renewable policies is shifting from subsidizing to risk mitigation
- With falling technology costs & rising electricity prices some policies that were doing both (such as sliding premia) do also loose their risk mitigation characteristic
- CfDs maintain lower market and regulatory risks for renewables, leading to lower financing costs
- Governments and consumers can profit from symmetric CfDs as they are hedged against uncertain power prices
- Affordable & stable green electricity prices urgently needed for decarbonisation of other sectors

References

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DIW Berlin — Deutsches Institut für Wirtschaftsforschung e.V.
Mohrenstraße 58, 10117 Berlin
www.diw.de

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