

Review by opponent of the Diploma thesis

Topic: **Pricing of Weather Derivatives**

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Opponent: **Jan Gerstberger**

This thesis describes various Weather Derivatives and describes in close detail Wind Derivatives. The main aim of the thesis is to analyze long term wind speed data and use the analysis for wind derivative pricing. The thesis is logically structured it begins with overall description of Weather Derivatives, comes over more detailed description of the specific types of Weather Derivatives and in the next chapters focuses on wind options. After detailed description of Wind Options the author describes obtained wind data. Next chapters are focused on step-by-step transformation of the data, evaluation of the model, Monte Carlo simulation, evaluation of the Monte Carlo, pricing model and the price calculation itself. In the last part the price of the Wind Option is used in calculation whether it is useful to hedge against year-to-year wind speed fluctuations using German renewable support scheme.

In my opinion, instructions present in thesis specification sheet (Zadání diplomové práce) have been fully met.

The appearance of the thesis is outstanding and the frequency of typos is negligible.

The structure of the thesis is clear, all figures and formulas are clearly described.

Although used data are not ideal (combination of NY wind data and German support scheme) there is very widely described why it has been done this way. The overall concept looks robust enough to analyze any set of input data.

The thesis itself may not be 100 % practically useful, but prepared models certainly are.

I recommend grade this thesis

A – Excellent

Using the ECTS grading scale and I recommend work for defense.

I have read several theses and I find this one is really outstanding and I believe that Author deserves besides “Excellent” grade an additional prize for outstanding work.

I have several questions:

- 1) At least in EU, the industrial standard for wind speed distribution is Weibull. Do you think or can you calculate what difference on annual energy output can use of “improper” distribution such as Weibull distribution cause?
- 2) On the page 69 there is a power curve of the GE 2.5 103 WEC. The curve ends on 25 mps what happens above this wind speed?
- 3) Do you think that other weather derivatives than Wind Options can be useful for wind farm operators e.g. CDD?

Prague, June 5, 2019
Jan Gerstberger