15th November 2024

POLITECNICO MILANO 1863

ANALYSIS OF THE ELECTRICITY SPOT MARKET IN ITALY

Nonparametric Statistics
MSc. Mathematical Engineering

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ABOUT THE DATA

Dataset:

Offer – Demand Dataset provided by Dr. Guillaume Koechlin*
The data have been collected by Gestore dei Mercati Energetici (**GME**)

Time Period: **2007 - 2024**

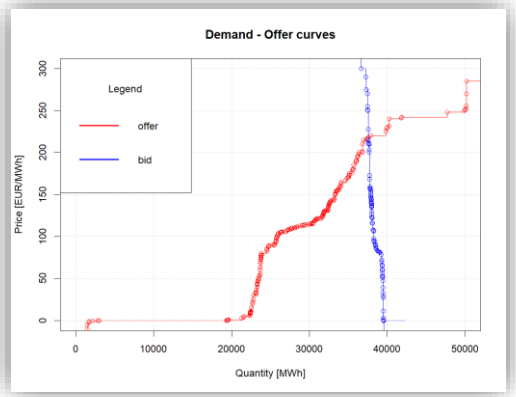
Data Features:

Fixing

- **Day**
- **Hour**
- **Zone**

we obtain a subdataset

- **Quantity** [MWh]
- **Price** [€/MWh]
- **Type** ∈ {OFF, BID}



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THE GOALS

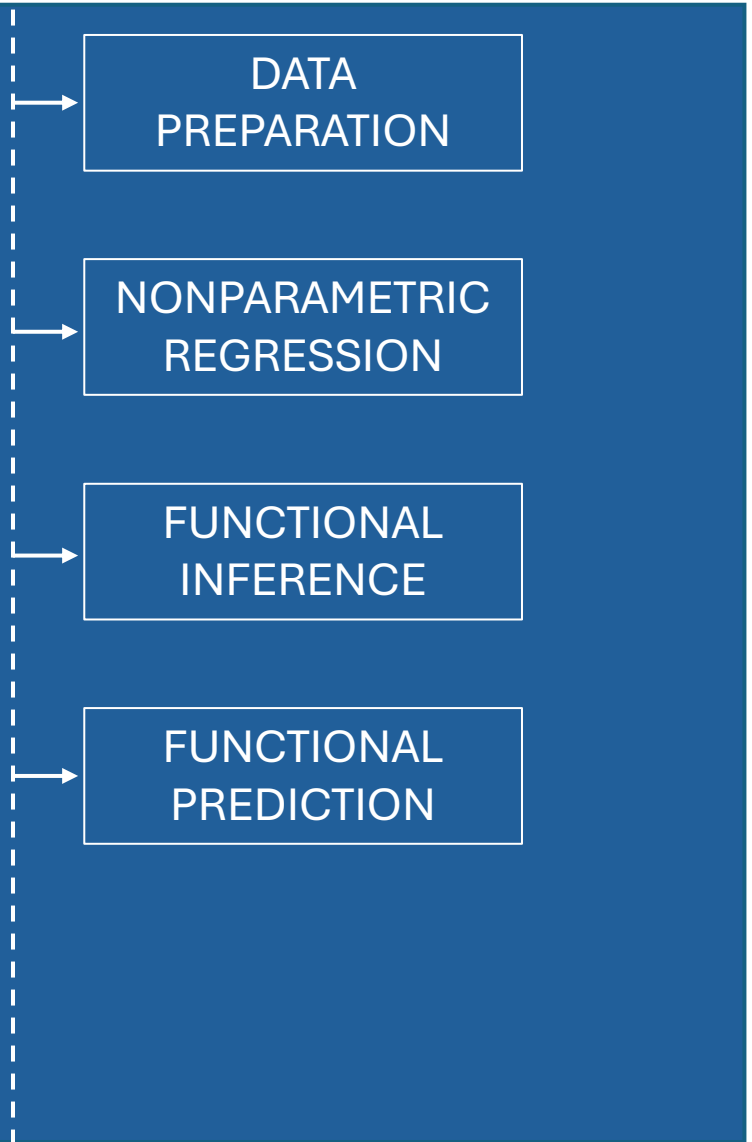
➢ ANALYSIS OF THE ENVIROMENT:

- Identify **trends** and **tendency** in the Electricity Market
- Identify which **factors** can be significant in determining the final price.

➢ PREDICTION:

- **Predict** both curves of Suppy and Demand for the next day, given the observed curves in the previous time instants.

EXPECTED WORKFLOW



- Data Processing
- Quick Data Exploration

- Time-Series Regression
- Suppy-Demand Curves Smoothing
- Functional Data Exploration

- Local Functional Inference on Time-Series Functions
- Local Functional Inference on Supply-Demand functional representative curves

- Auto Regressive Functional Model

NOTE: It could require to identify and implement proper methods to treat missing functional observations