Modelling Intra Day electricity prices

Dr Blazej Radomski
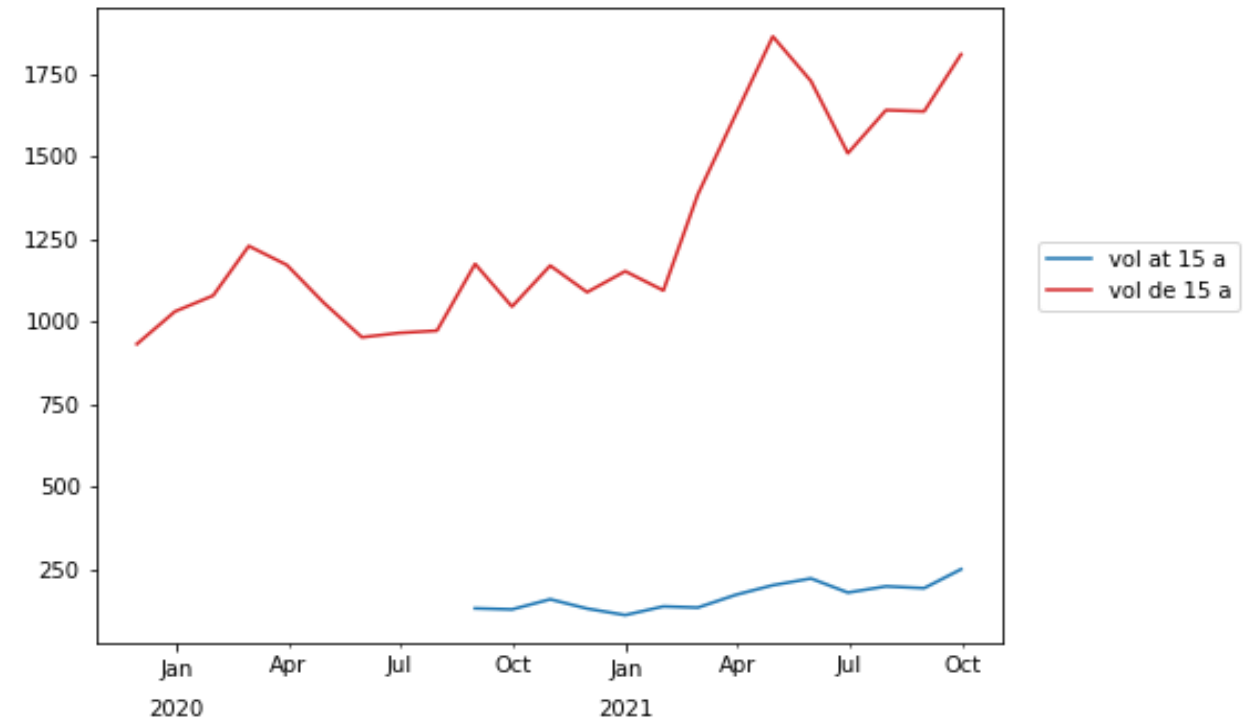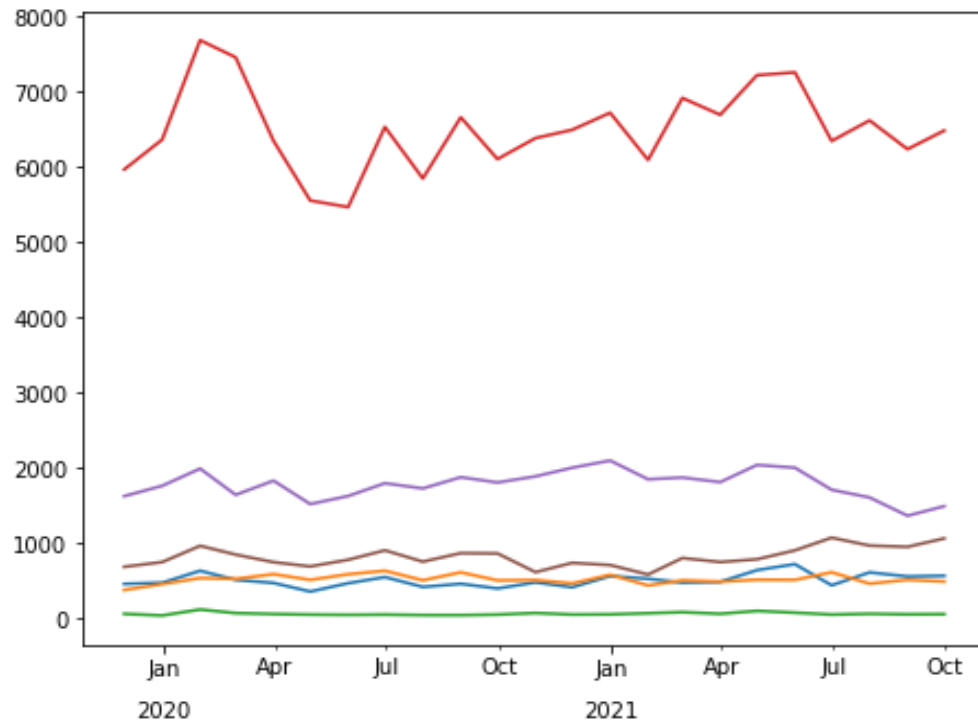
Senior Quantitative Analyst / Head of Volue Insight – Germany

VOLUE

Agenda

- Did the market change?

- Look at traded volumes and trading behavior

- The problem and the solution: how to forecast effectively

VOLUE

ID Volumes across EPEX markets in Europe
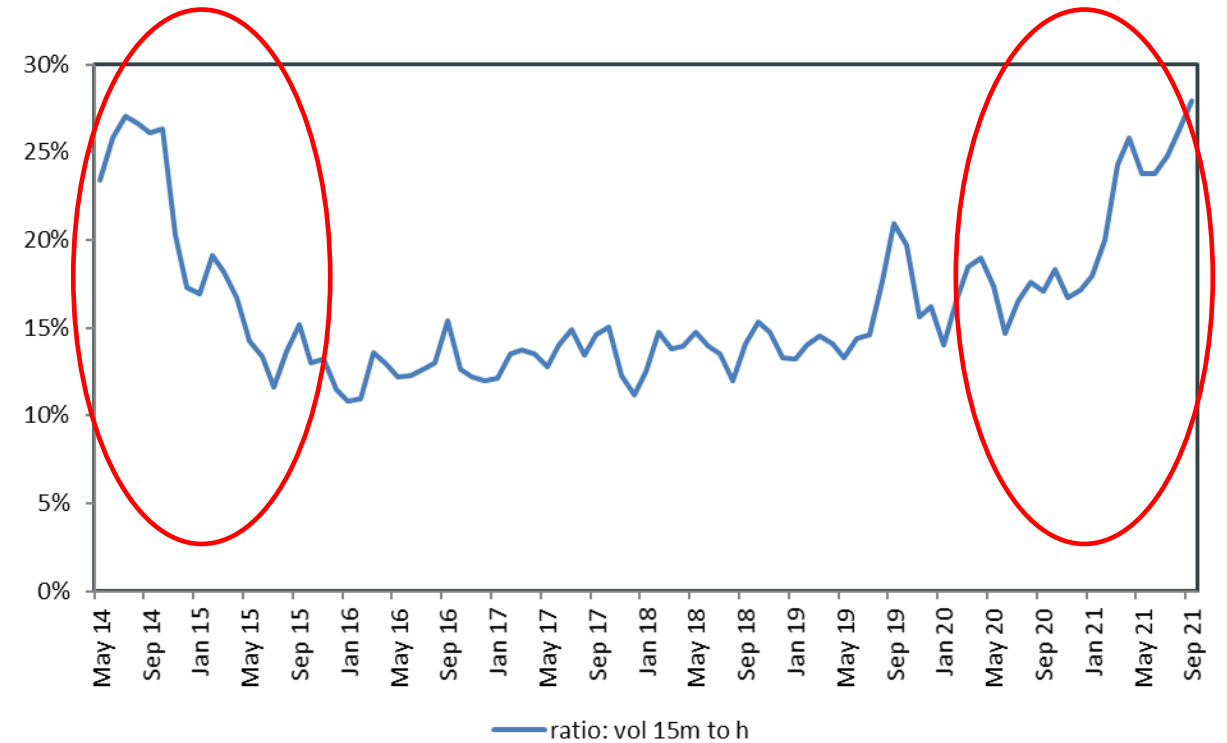## (monthly figures)

VOLUE

Hourly and 15 min. ID volumes in Germany
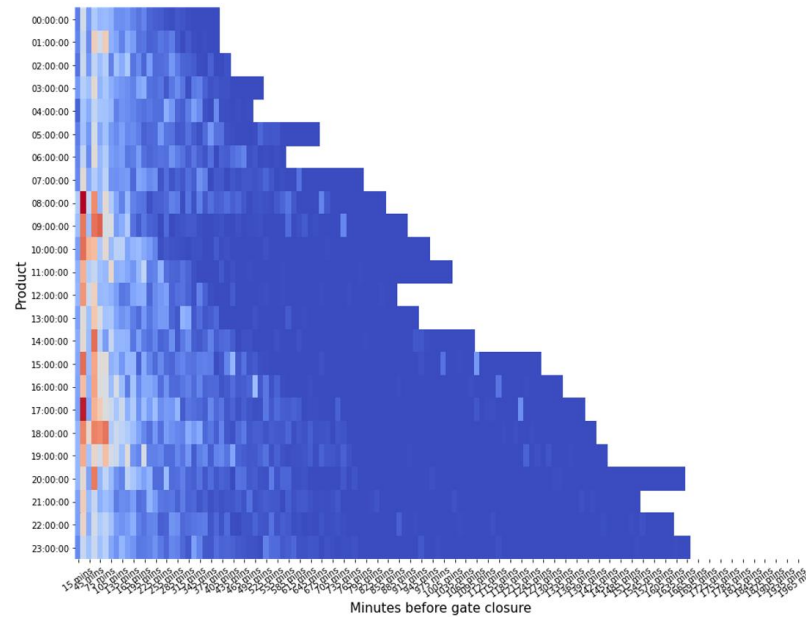## (monthly figures)

15 min. DA auctions introduced in 2014

- **EXAA** in Sep 2014
- **EPEX** in Dec 2014

Share of 15 min contracts traded intraday **started to increase again** in late 2019 / early 2020.
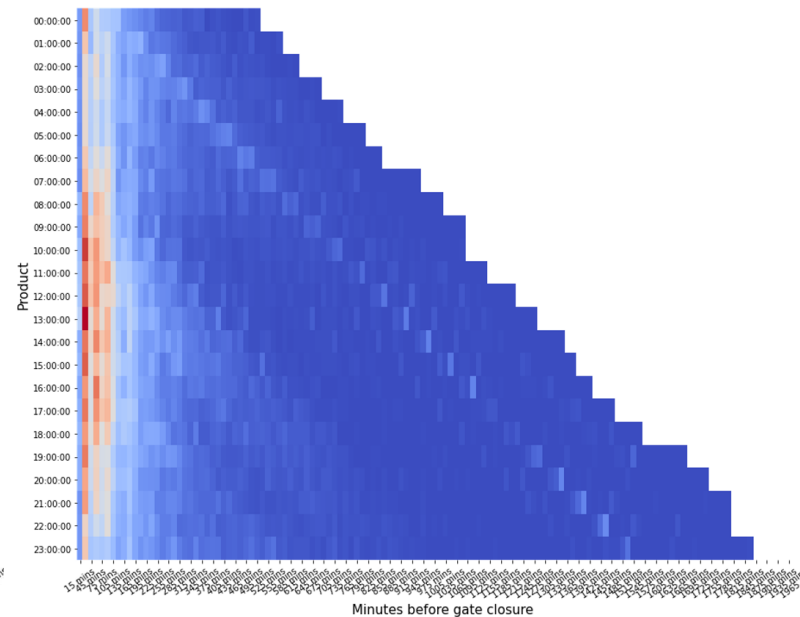

— ratio: vol 15m to h

VOLUE

Changing trading pattern?
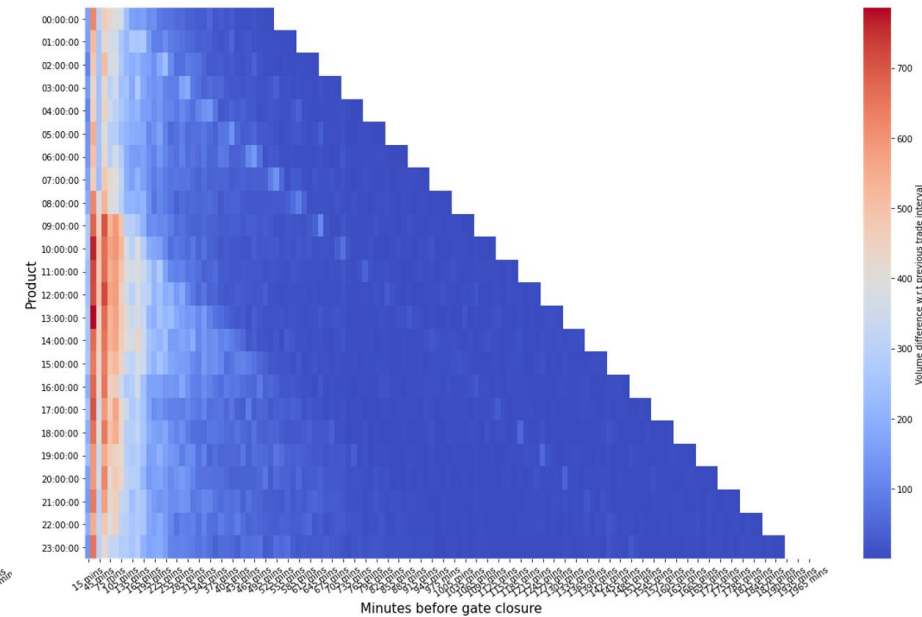## (traded volumes: DE hourly ID market)

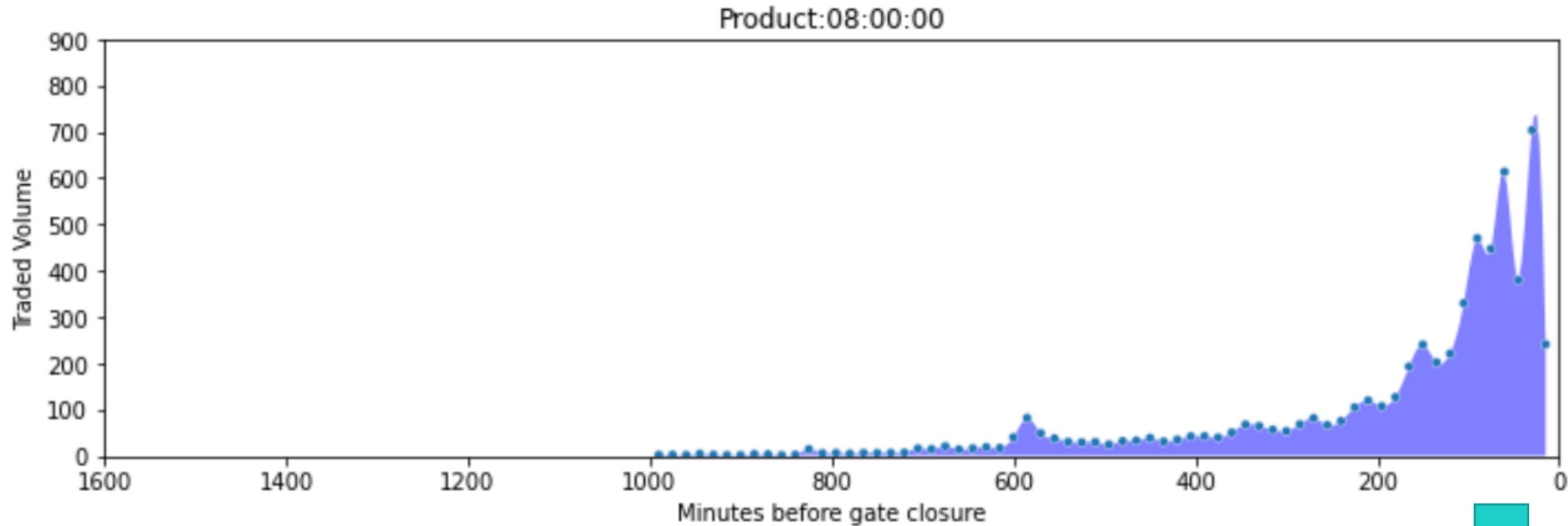How contracts are traded until gate closure (2019-Oct)
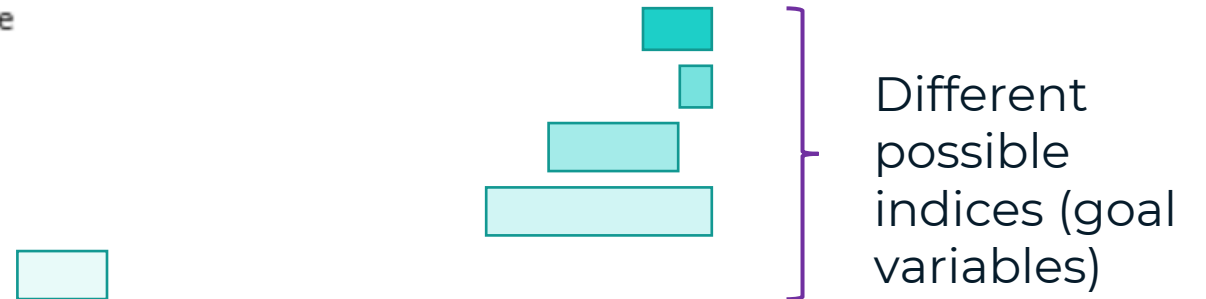
How contracts are traded until gate closure (2020-Sep)

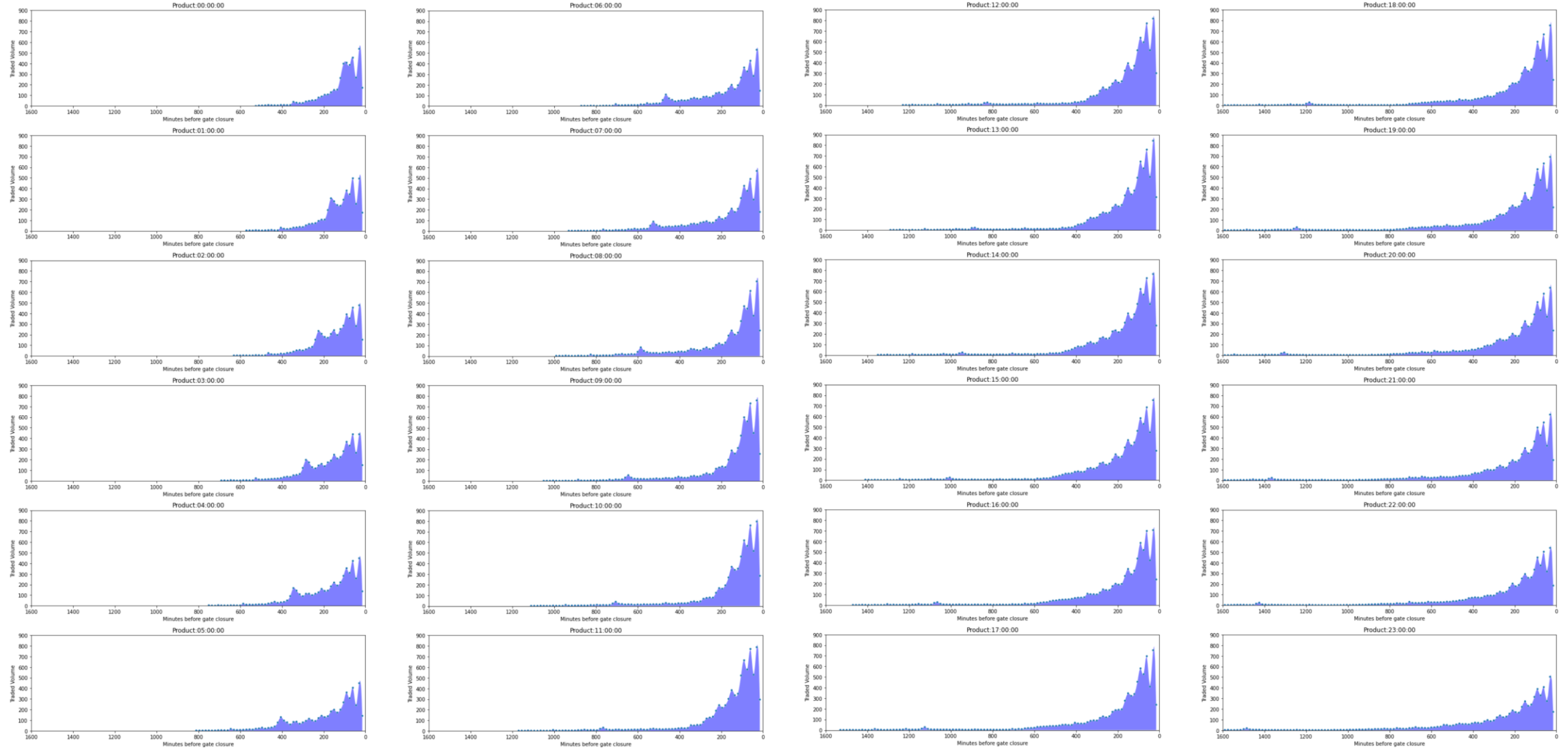How contracts are traded until gate closure (2021-Sep)
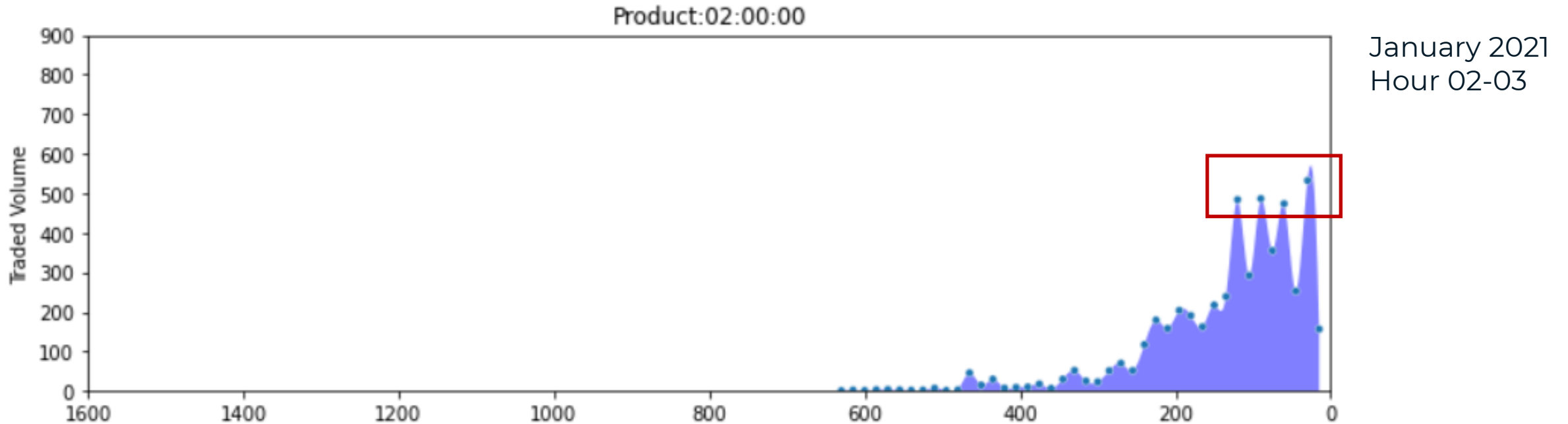
VOLUE

Consequences for model design?

Product:08:00:00

Oct 2019 - Sep 2021
Avg volume for
hour 08-09

Different
possible
indices (goal
variables)

Density of volumes (DE, hourly ID, 10.2019 until now)

Consequences for model design?

January 2021
Hour 02-03

Zig-zag pattern: more activity at **round hours** and **half past** a round hour.

Agenda

- Did the market change?

- Look at traded volumes and trading behavior

- **The problem and the solution: how to forecast effectively**

VOLUE

The Model and its Quality

- **Point forecasts** difficult. Much more appropriate are the **trend forecasts**. And they can work together with various trading strategies!

- Quality judgement of a continuous forecast in a continuous trading environment not trivial.

- In case of trend forecasts, **Hitrate** as a measure seems to be much more suitable than typical error statistics, like RMSE, MAE, etc.

- Concept of **Shadow Portfolio**
  - Win / Loss simulation over a certain timeframe
  - A set of standardized trading strategies (with predefined parameters)
  - Position opening with either Short or Long, otherwise Wait. Closing with opposite trade before gate closure, or earlier with TakeProfit or with StopLoss conditions
  - Fixed volume per transaction

# Quality: Shadow Portfolio results


Example

- set of 72 different trading strategies

- time period April – September 2021

- German hourly ID market
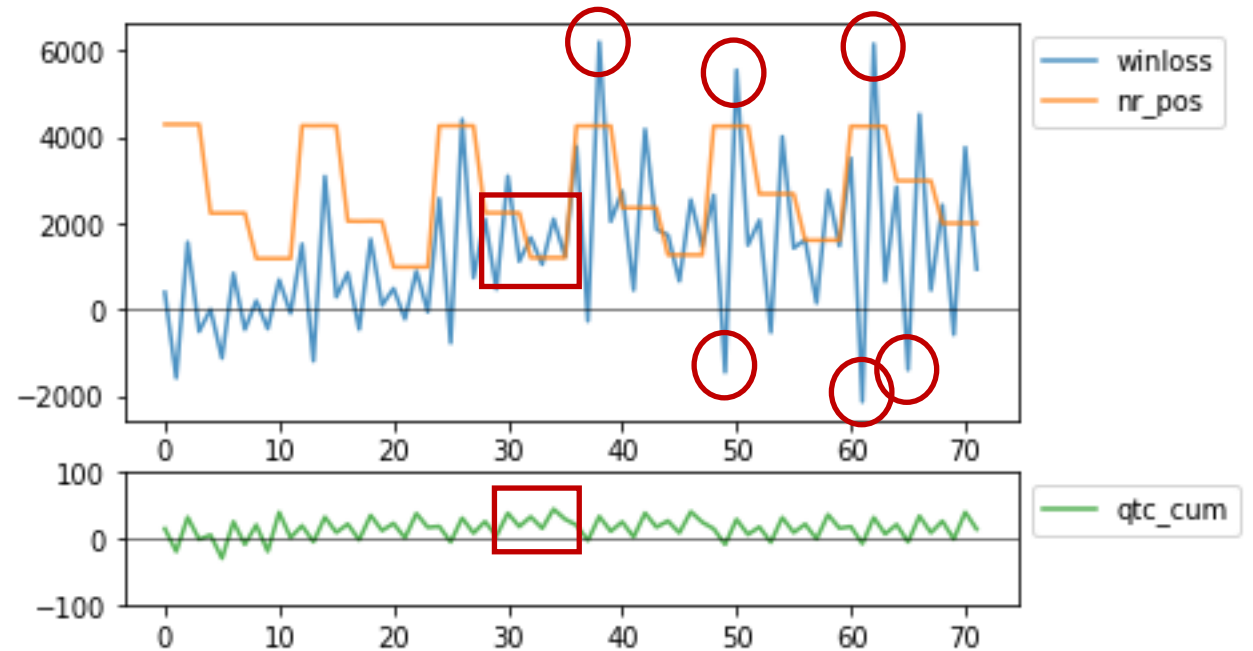
Shadow Portfolio results

- Strategies with continuously **growing Winloss** to be identified

- Range for **optimal parameters** to be selected

- This includes also the correctly identified **opening timepoints** which do match the results of **traded volumes** analysis (highest liquidity).
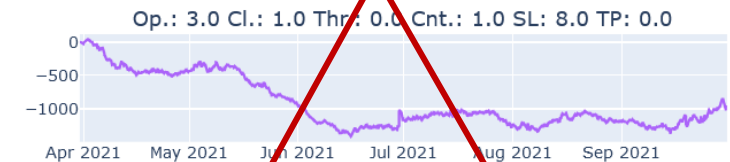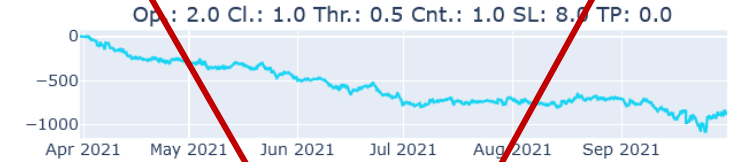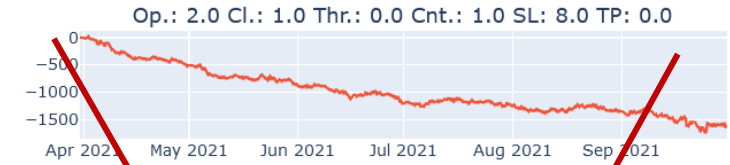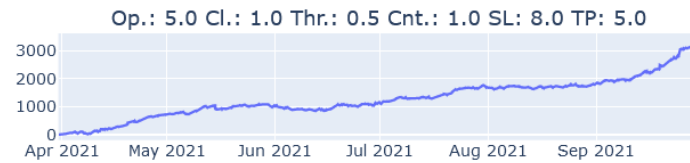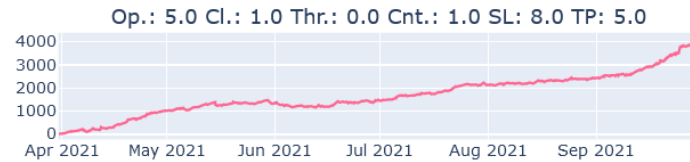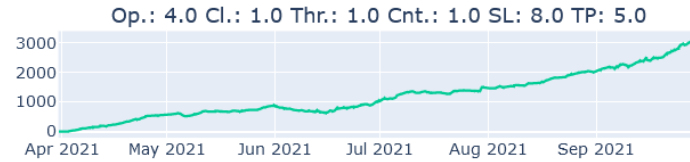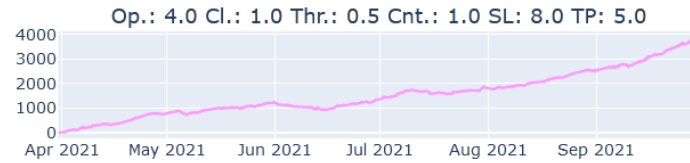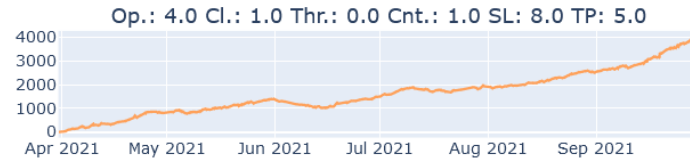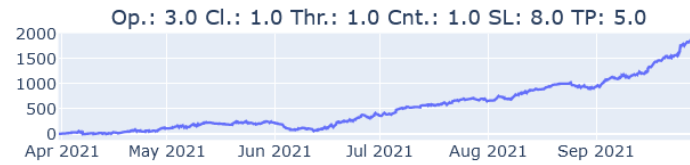
But what about CEE and SEE?

- Growing **share of renewables** generation

- Impact of **cross border trades** and progressing **market coupling**

- Development of **continuous** trading

- Pan-European tendency of trading **closer to delivery**

VOLUE

Thank you!

Dr Blazej Radomski

blazej.radomski@volue.com