"Modeling Bank's Payment Submittal Decision" *by Walter Beyeler*

A discussion

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A summary of the presentation

- Project goals
  - *Describe dynamics of the payment process*
  - *Understand responses of the banks*

- Modeling issues
  - *Polynet*

- Cost parameters
  - *Delay, Intraday overdraft, Failed payments, Overnight overdraft, Overnight deposit, Funding*

- Heuristic bank decision making
  - *Chart (… rules vs discretion?)*

The dynamics of the payment process

- The key issue: smooth flow of payments.
  - *Minimise **settlement delay** and **liquidity requirements***

- Are these parameters observable?
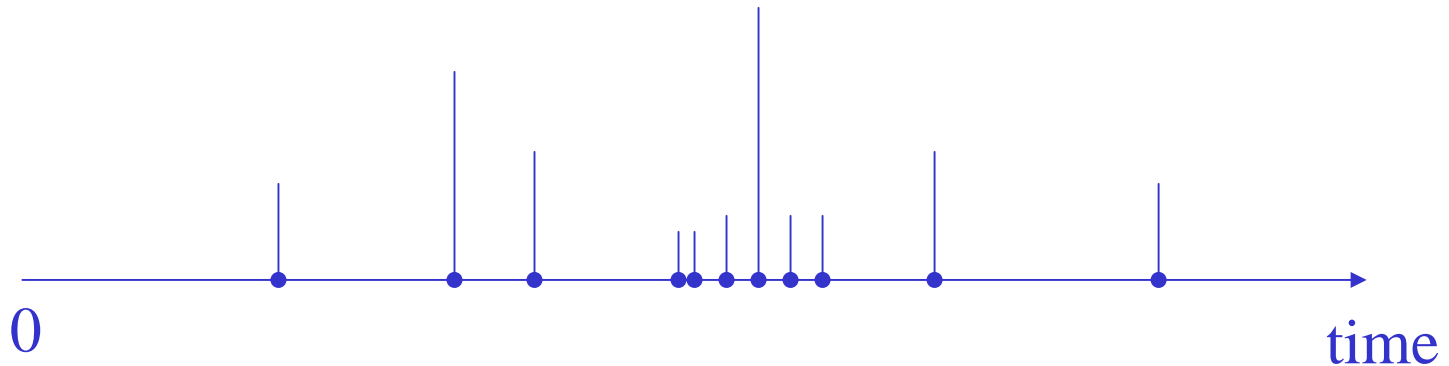 - *Size of the queue not necessarily an indicator of the delay*

Modeling approaches

- *Rule based*
- *Decision trees*
- *Neural networks*
- *Fuzzy logic*
- ***Statistical analysis*** ⟵
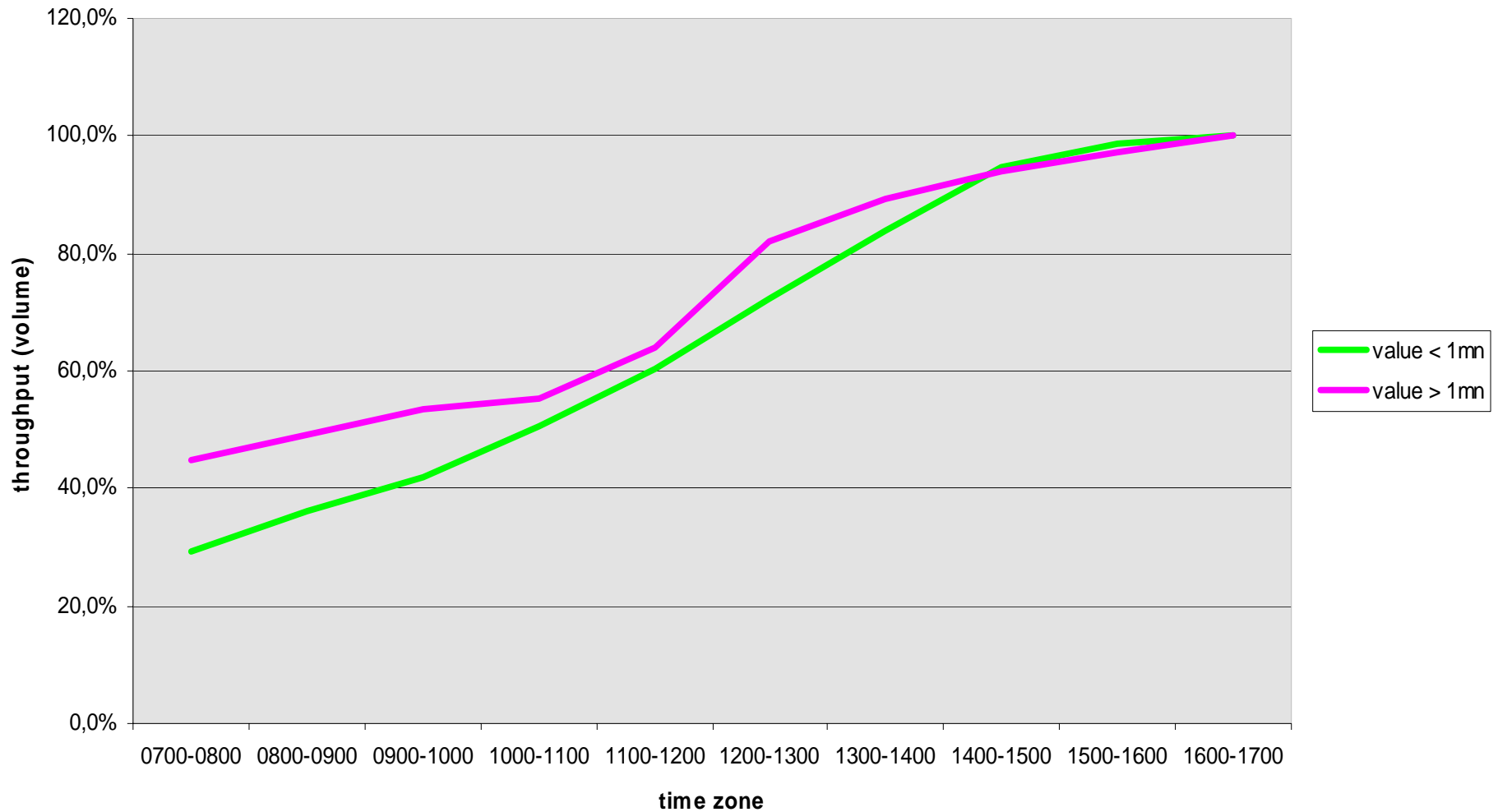- *Control theory*
- *Hybrid*

A statistical approach

- The payment submission process can be viewed as a **point process**

The intraday payment flow

Chart showing throughput (volume) on the y-axis (0,0% to 120,0%) versus time zone on the x-axis (0700-0800 to 1600-1700). Two lines: green "value < 1mn" and magenta "value > 1mn".

Some modeling issues

- What is the "most likely" payment process?
  - *per credit institution, per system*
- How stable is it?
  - *volatility*
- How robust is it?
  - *measure the distance between the payment processes when one or more participants are removed or delay their payments*