Payment System Design Using an ABM Approach and RL

Discussion

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Motivation and Objective

Motivation

How should new HVPS be designed?

- Performing counterfactual exercises with realistic and reliable estimates of a structural model

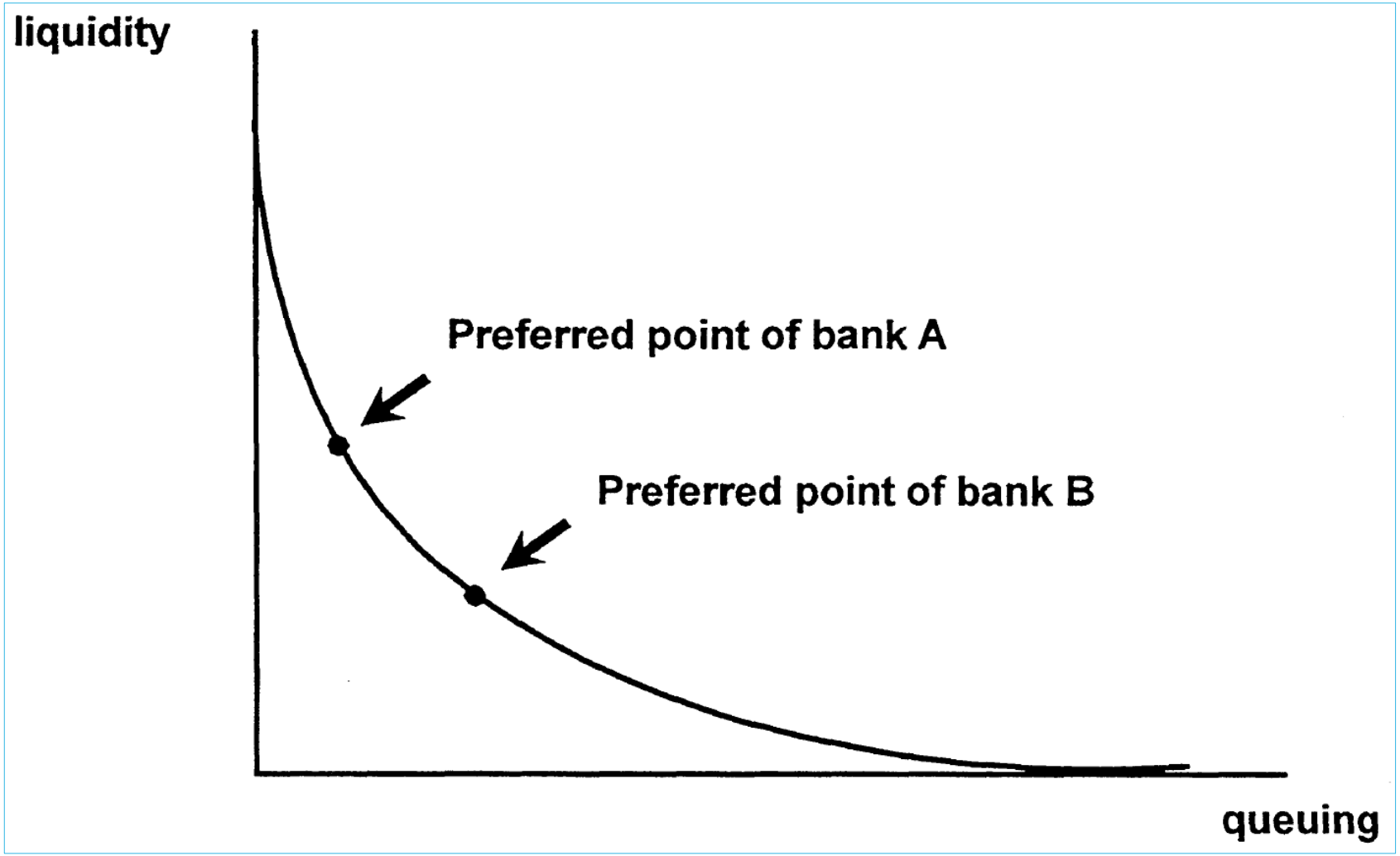
How are new HVPS designed?

- Empirical evaluation of different design options using historical data
- But historical data were generated under different rules and behaviour of participants would likely change
- How important are the behavioural changes?

Objective

- First: bring machine learning (ML) techniques to study payments systems
  - Approximate the current behavioural rules of participants in the Canadian LVTS
- Future: help design new system by investigating the implied tradeoffs (delay and liquidity) of alternative designs

The Liquidity – Delay curve



Source:

BANK OF FINLAND
DISCUSSION PAPERS

16/98

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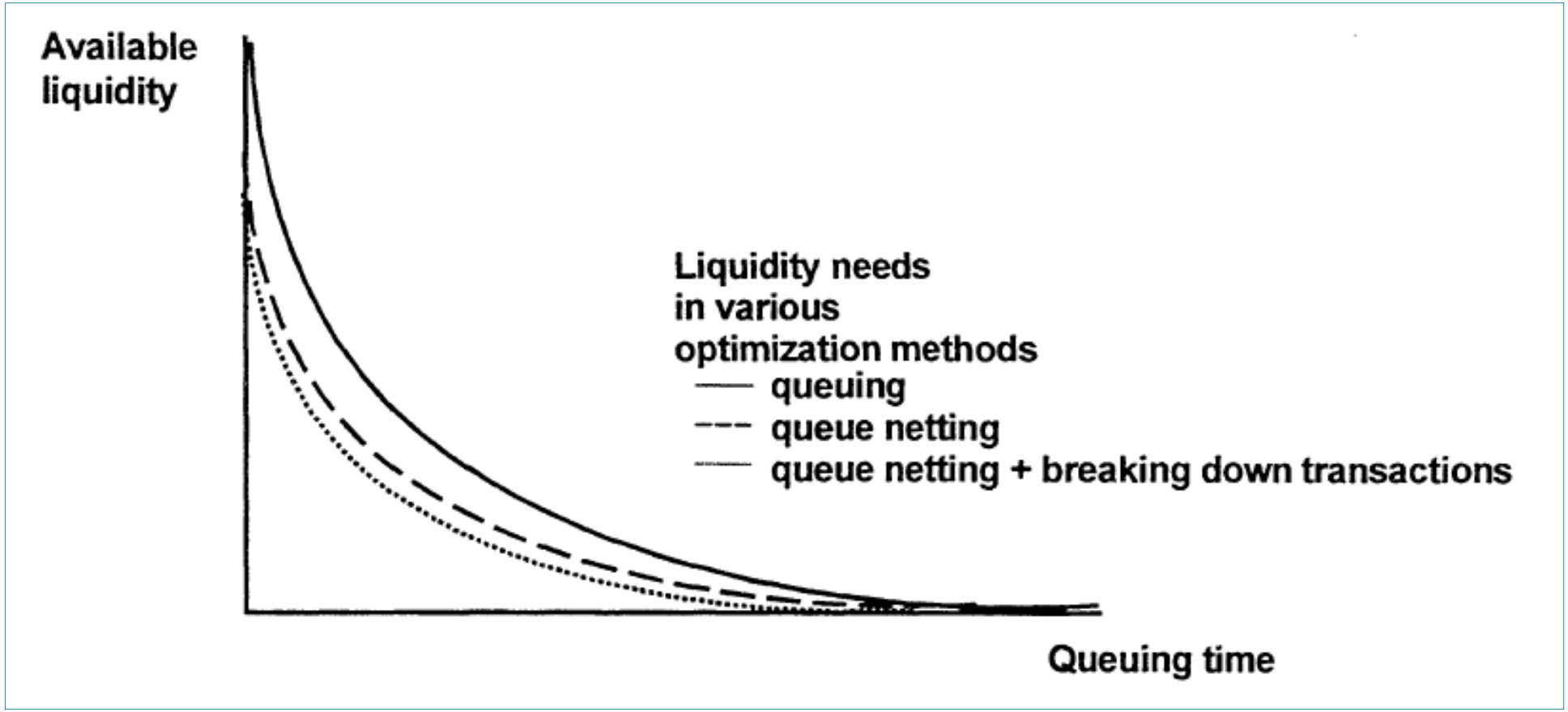
Financial Markets Department
31.7.1998

The Liquidity – Delay curve – System alterations



Source:

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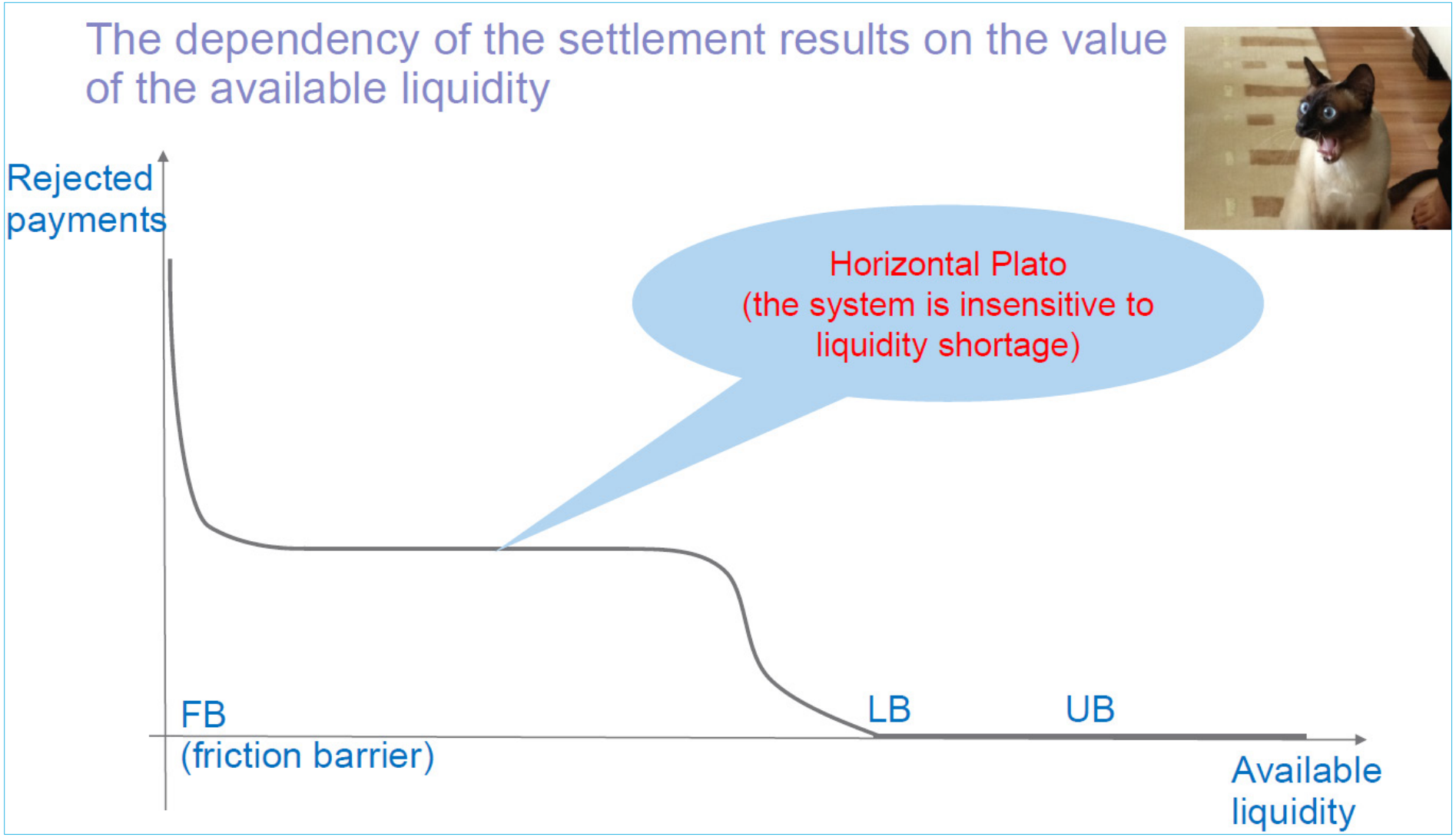
The Liquidity – Delay curve – More exact measurements

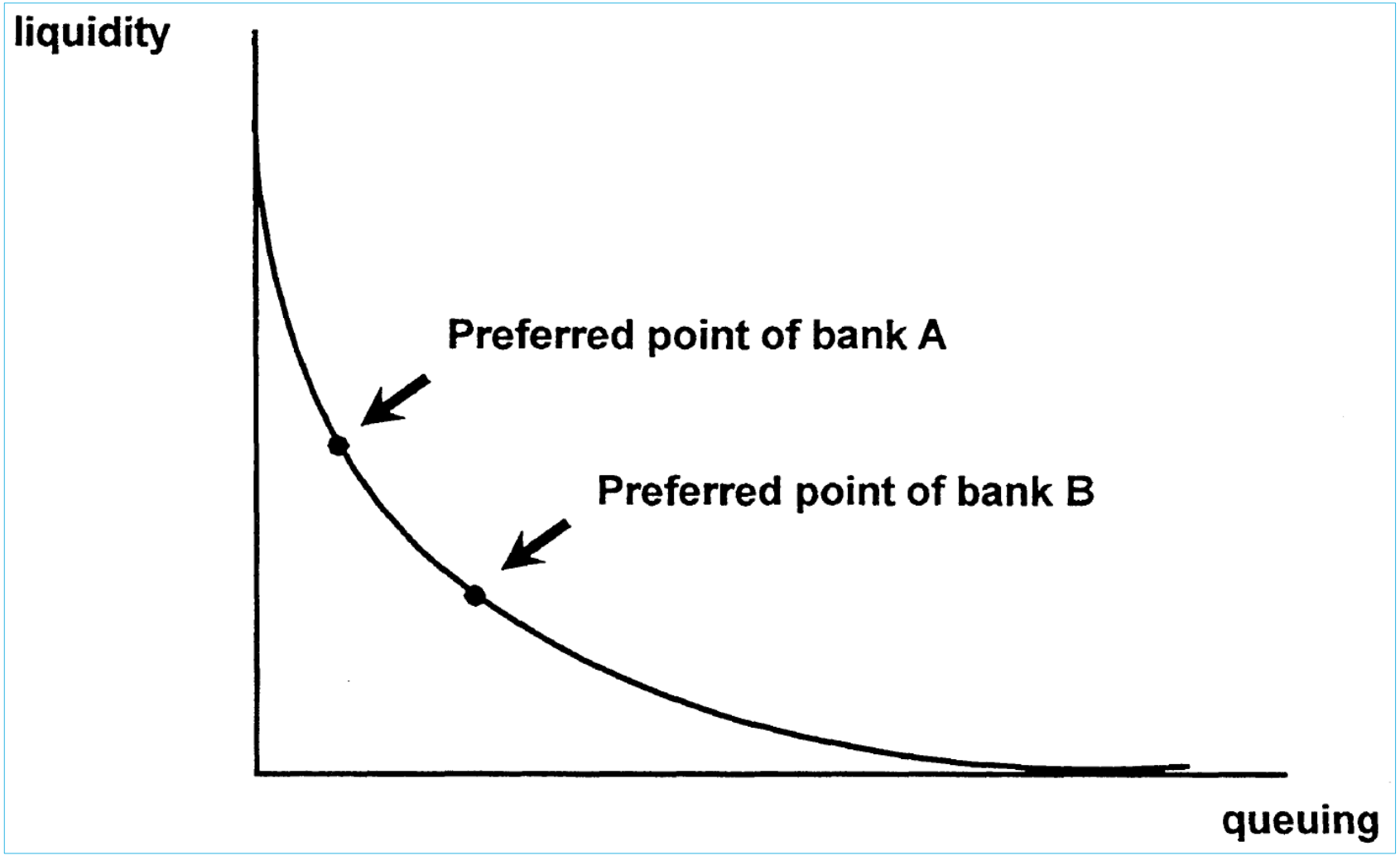


Source:

Vladimir Kulipanov,
Economical adviser,
National payment system Department,

August 30, 2018
Helsinki,
BOF16th Simulator Seminar

Bank Behavior



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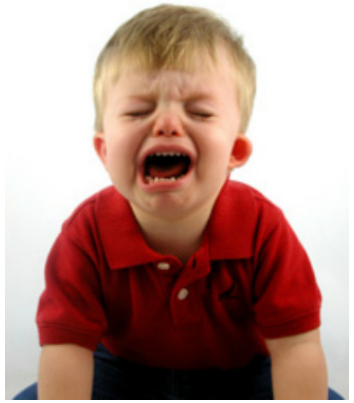
Eternal adjustment of behavior…



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Comments and Questions

- Planned approach and methodology are impressive and promising
- Looking forward to your results
- Where lies the curve exactly for your situation?
- What are the preferred positions of the banks ?
- Other sources to obtain policy rules other than historical data ?
- What happens after the system has been improved ?