

# **The audacity of settlement speed - Settlement trade-off for ancillary systems in TARGET2**

**13th Simulator Seminar of Bank of Finland  
Helsinki**

**28 August 2015**

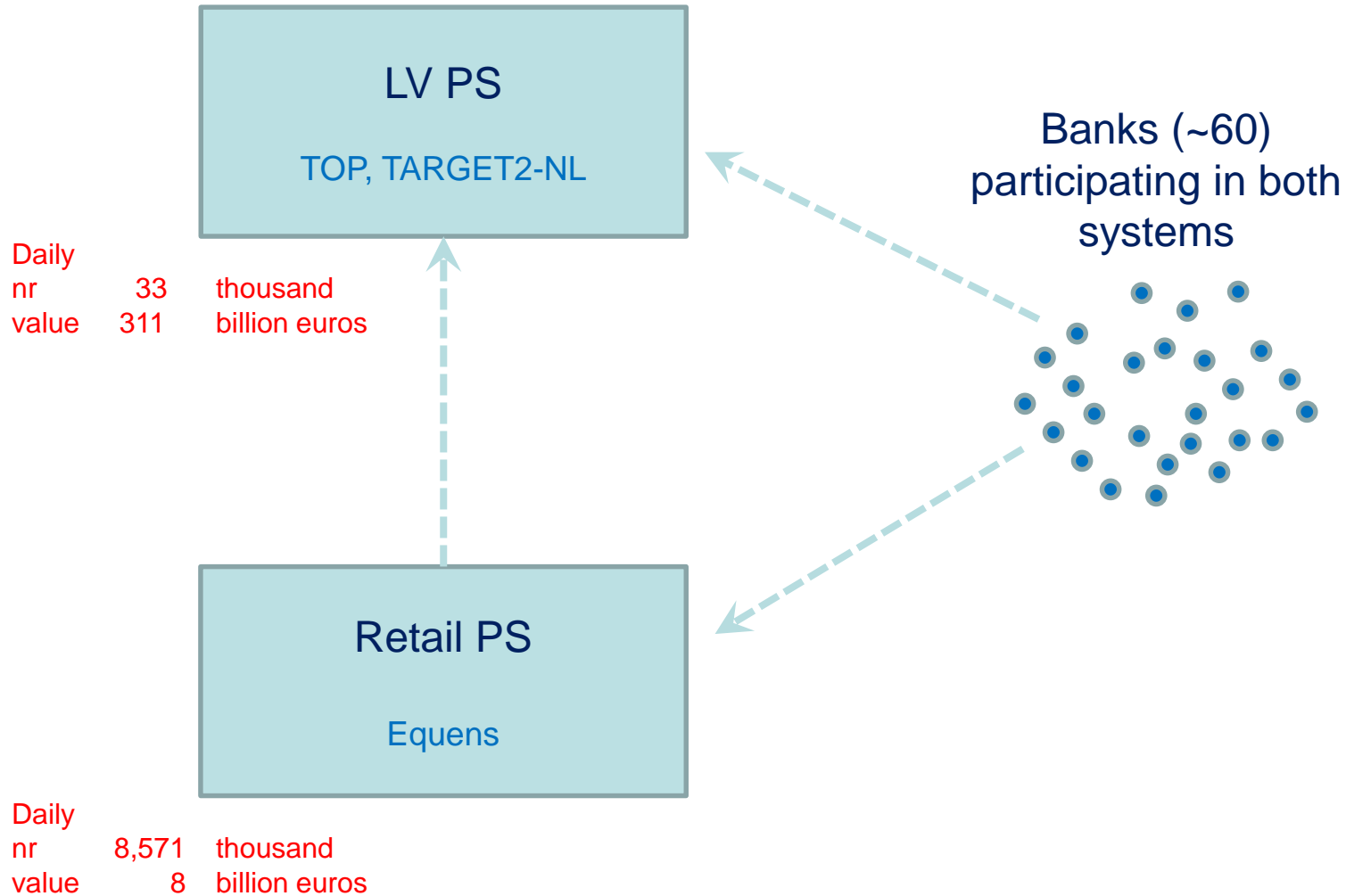
**Martin Diehl  
Richard Heuver**

**Part 2: Introduction of multiple settlements per day  
of the retail payment system in the Netherlands**

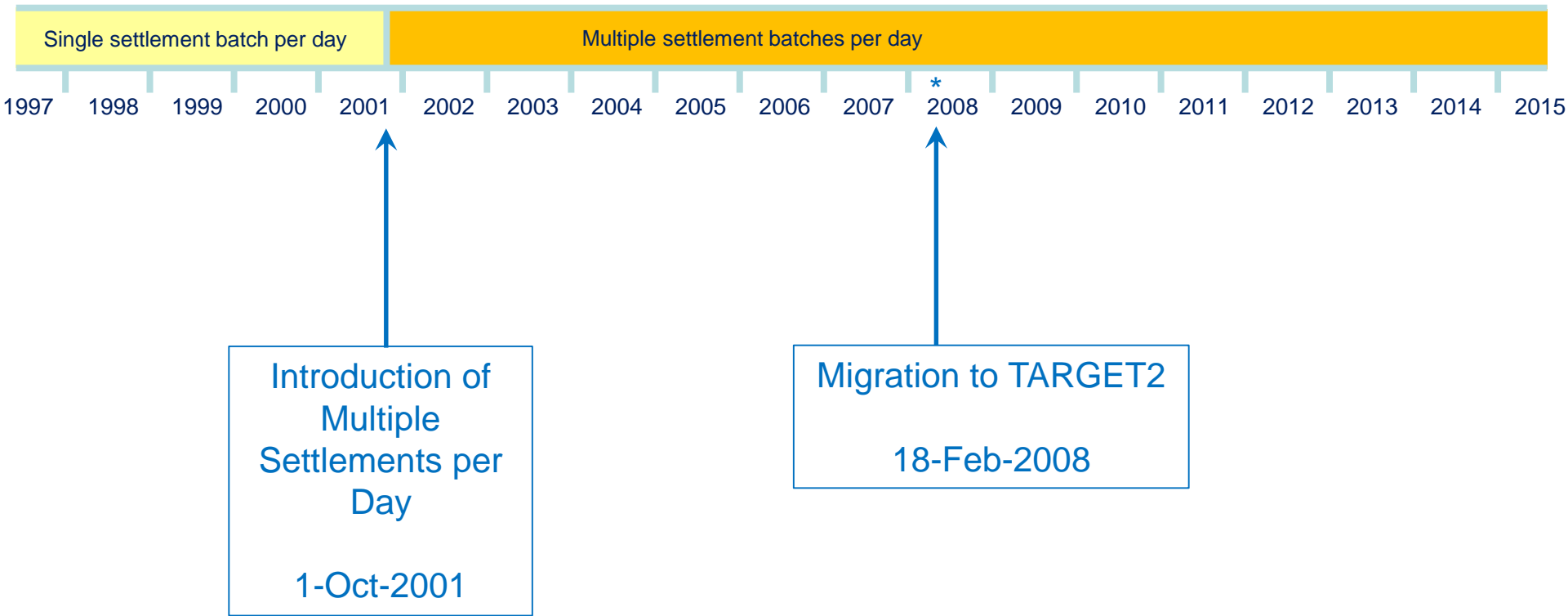
# Outline

- Introduction
- Research question
- Background
- Analysis
- Discussion, conclusions, future research

# Introduction - Dutch Payment Landscape



# Introduction - Timeline of Changes



# Introduction - Implementing multiple settlements

- Purpose:
  - Decreasing the risk of unwinding
  - Speedup of retail payments (towards intra day settlement)  
**Customer-to-customer within two hours**
- Implementation; two types of batches
  - Debit lot settlement (one debit, multiple credits)  
Every half hour, or sooner according to a ceiling amount set by the debited bank
  - Credit lot settlement (multiple debits, multiple credits)  
Every half hour

# (mini) Research Question

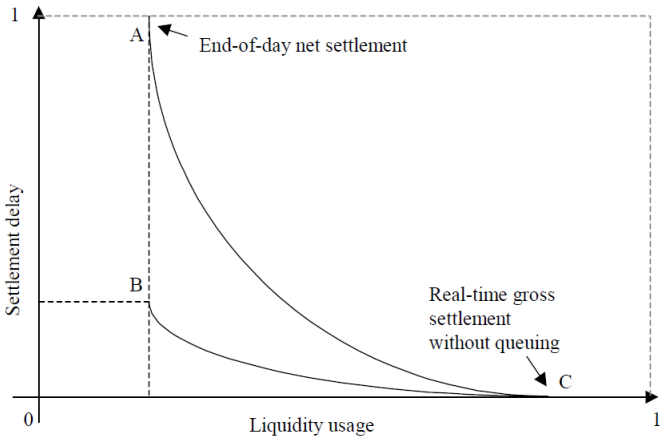
What was the liquidity impact  
of the changeover

from one settlement batch per day  
to multiple settlement batches per day  
for participants in the RTGS ?

PM. No data from retail system available.

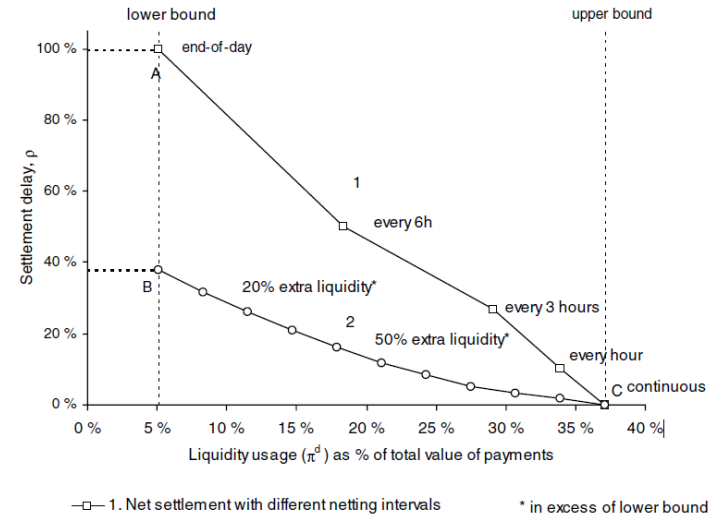
# Background

## Net towards Gross - Literature on liquidity usage



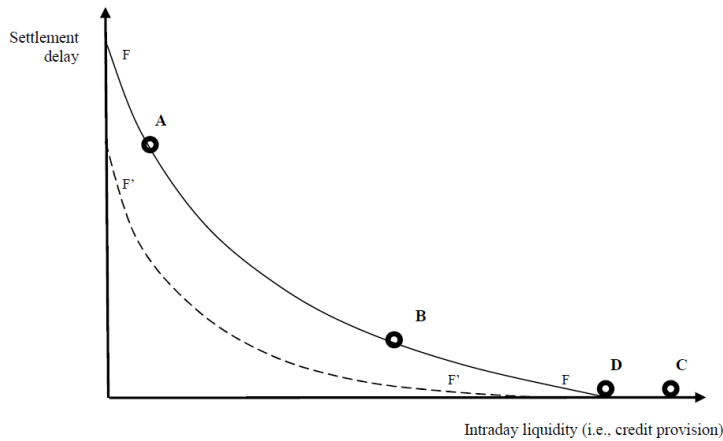
BC: amount of reserves and intraday credit in RTGS system with queuing      AC: number of daily net settlements in TDNS system without counterparty risk

Koponen/Soramaki 1998

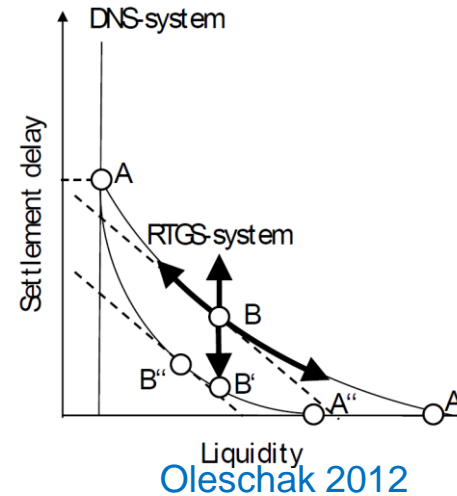


□ 1. Net settlement with different netting intervals      \* in excess of lower bound

Leinonen 1999



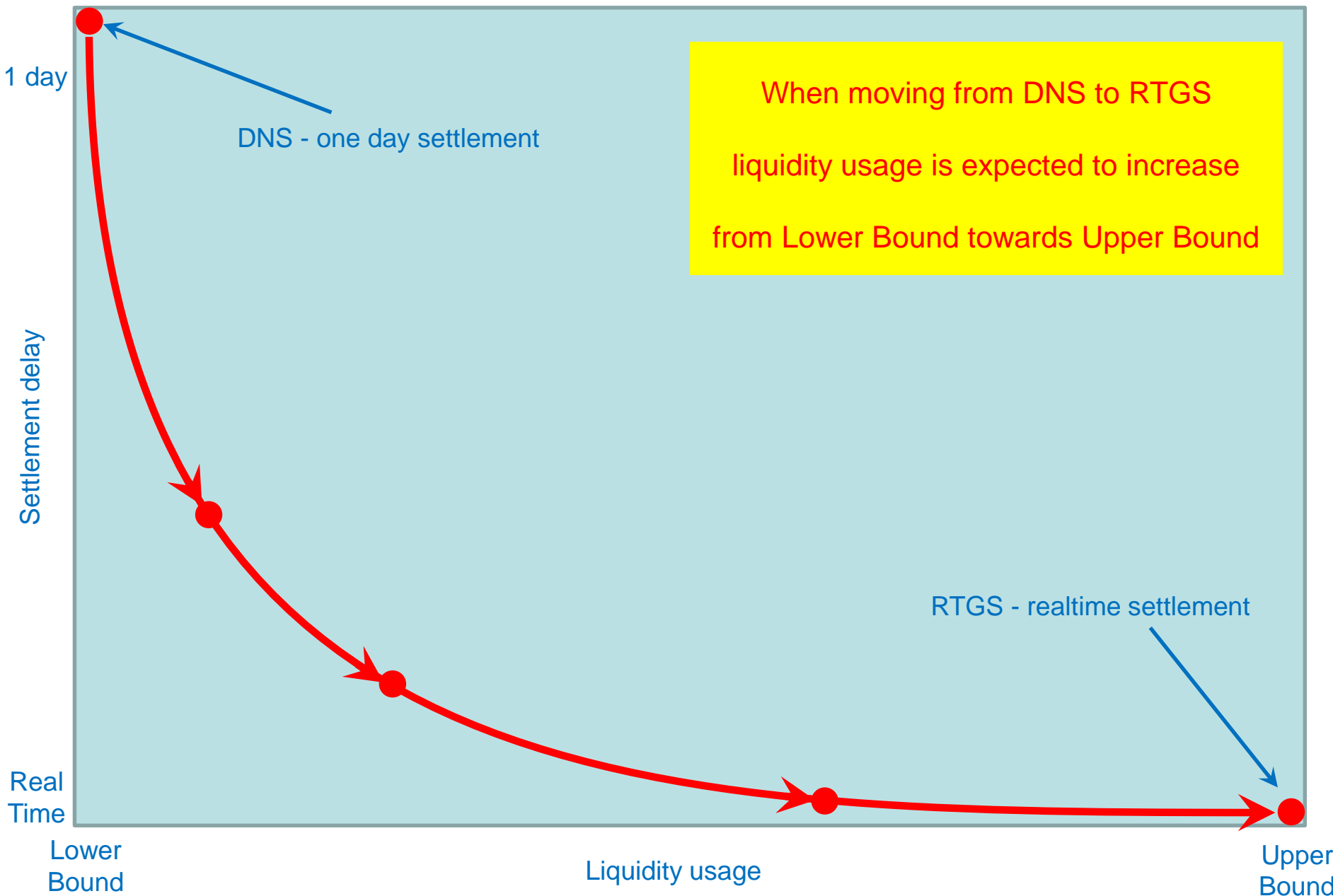
Arjani 2006



Oleschak 2012

# Background

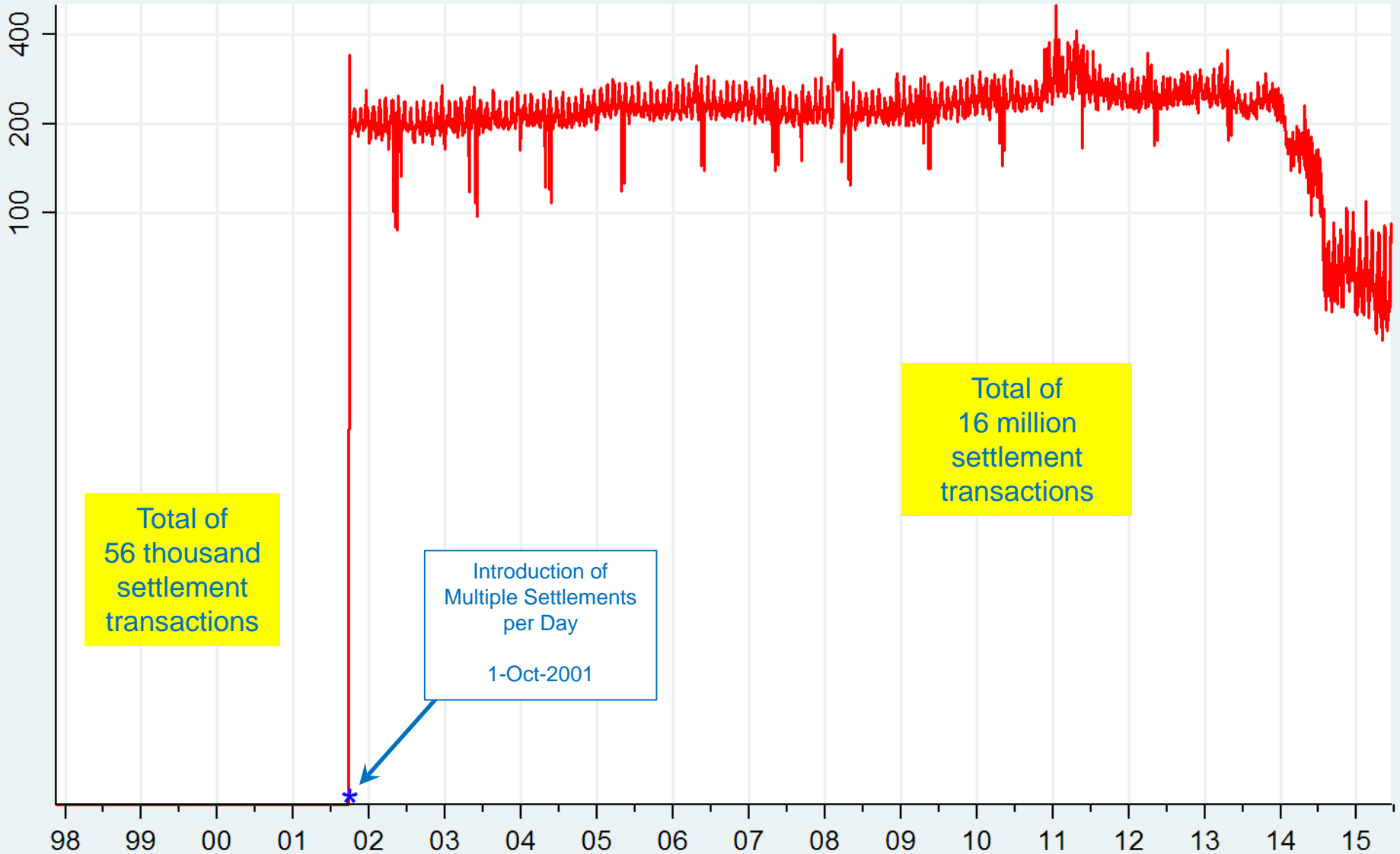
## Net towards Gross - Literature on liquidity usage





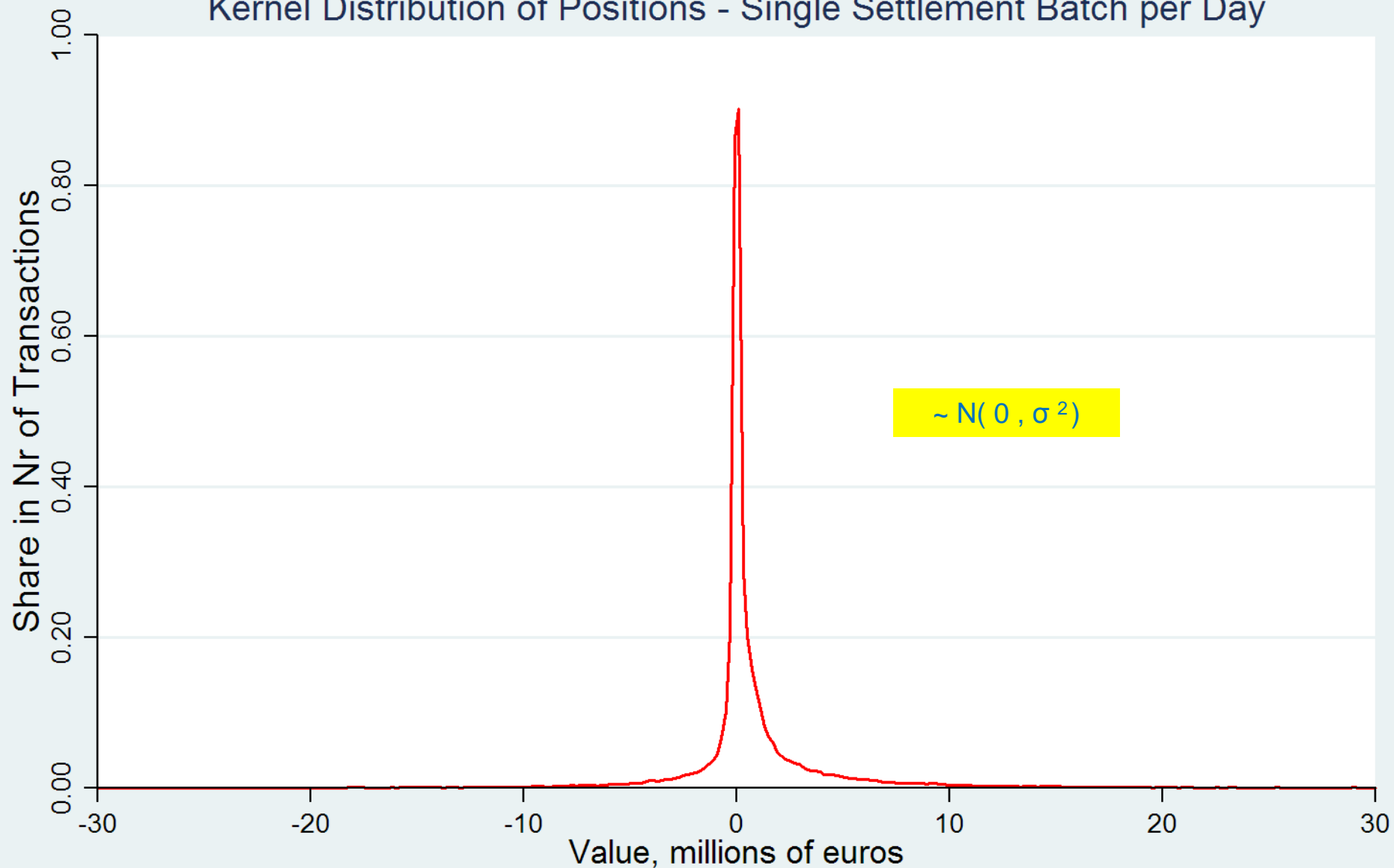
# Analysis - Transaction data

## Daily Number of Settlement Batches



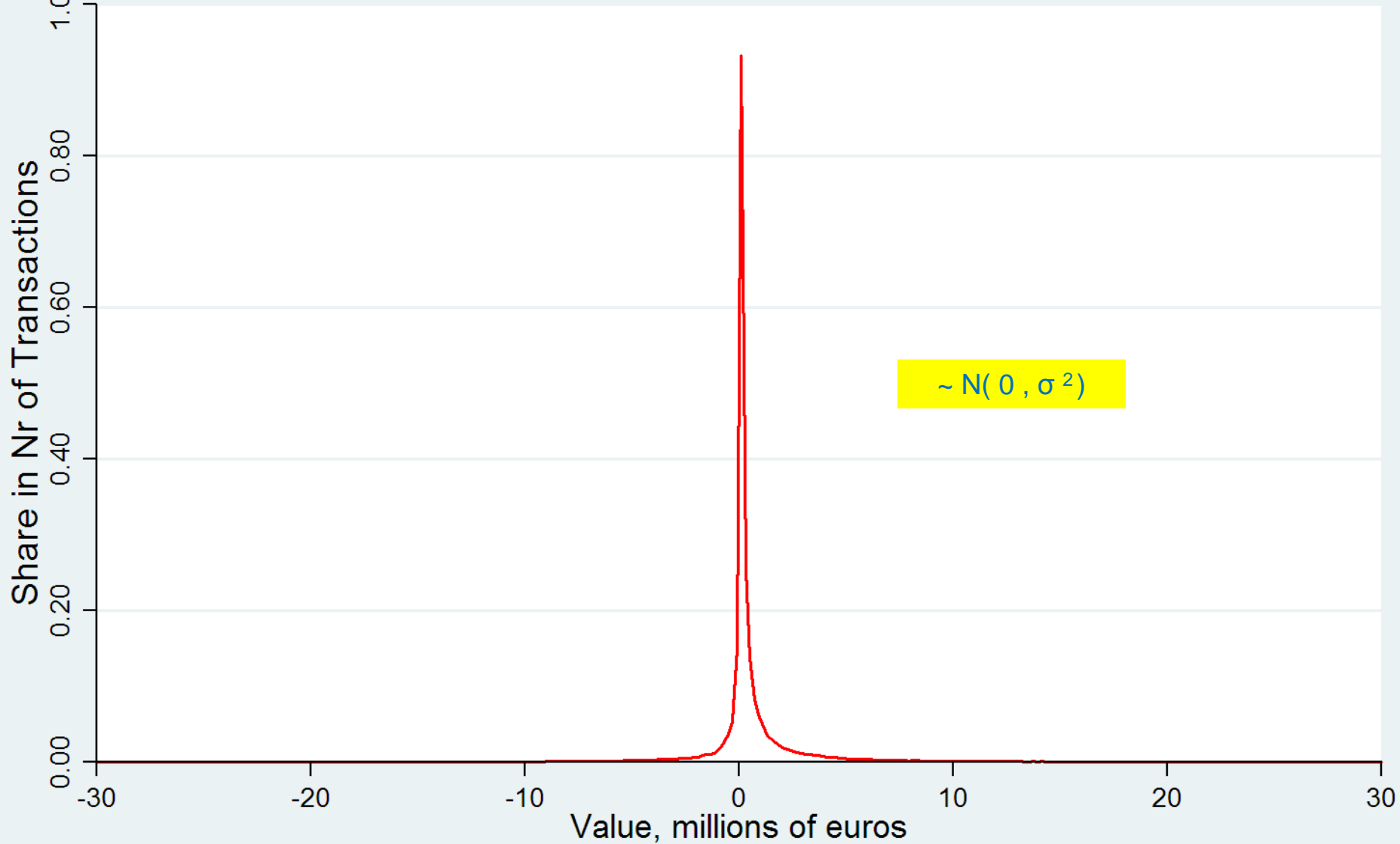
# Distribution of all positions within batches - Single

Kernel Distribution of Positions - Single Settlement Batch per Day



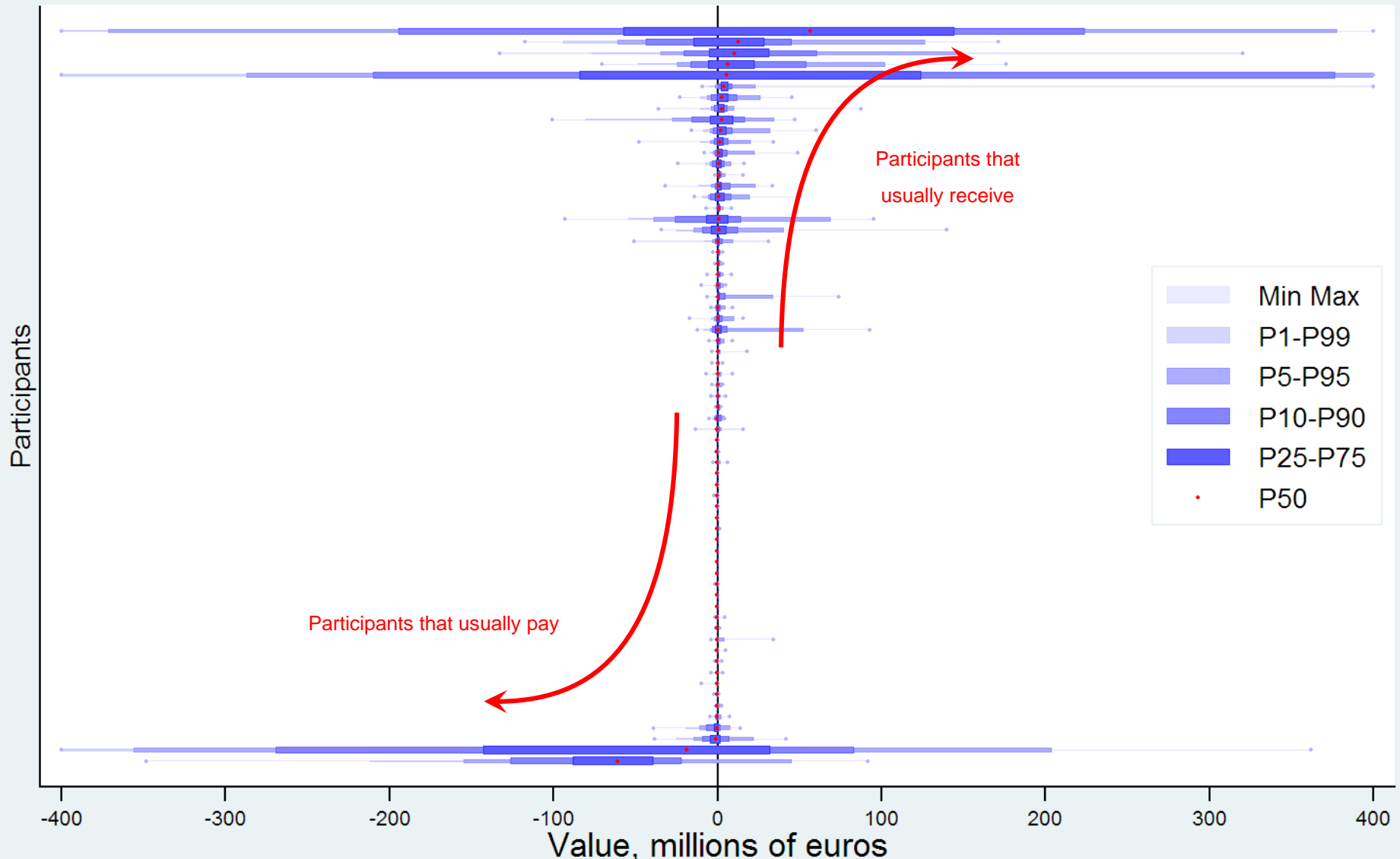
# Distribution of all positions within batches - Multiple

Kernel Distribution of Positions - Multiple Settlement Batches per Day



# Average position of participants - Single batch per day

Distribution of Positions of Participants - Single Settlement Batches per Day

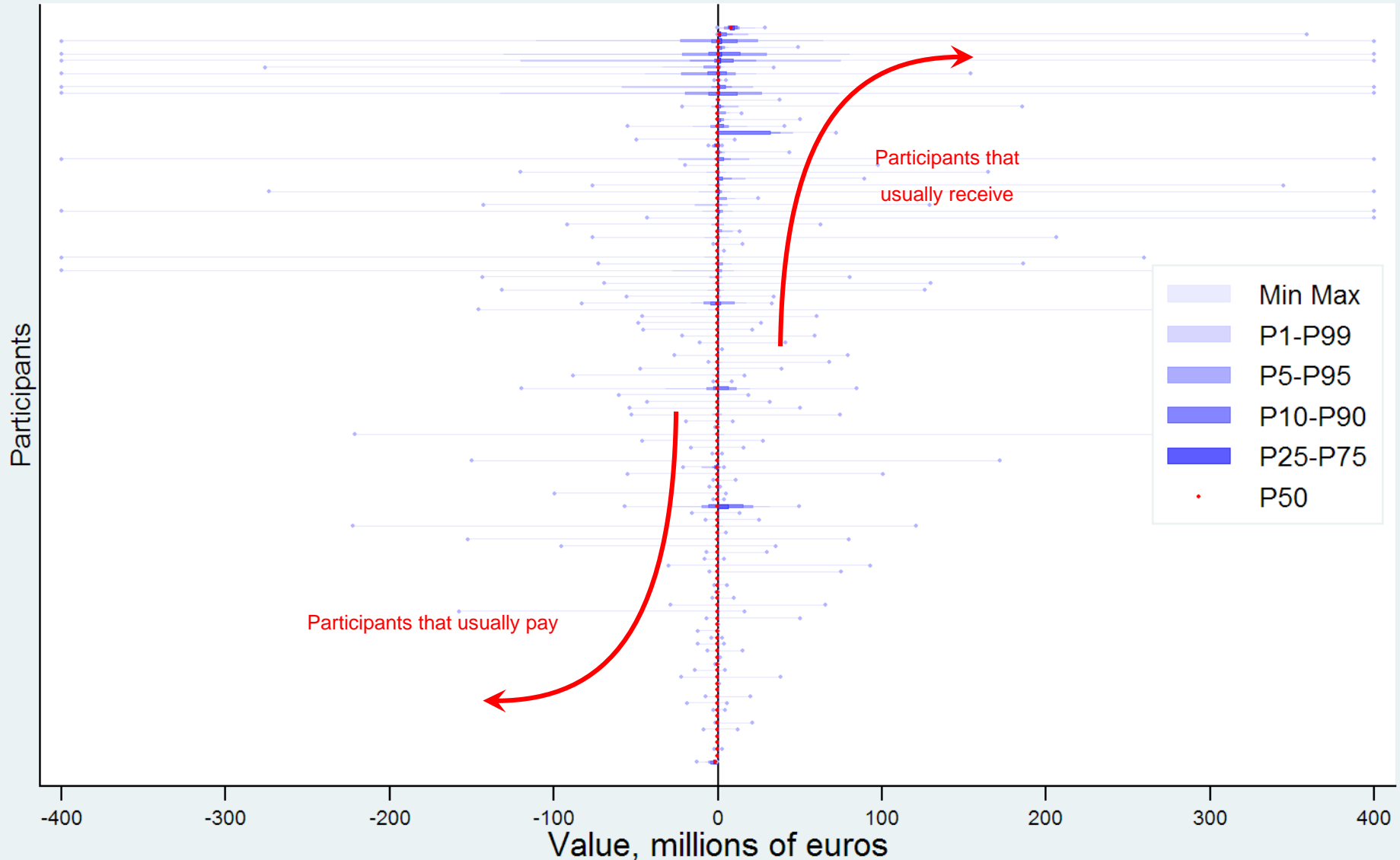


Participants sorted according to average position within a batch.

Graph shows that there are structural receiving and paying participants per settlement batch.

# Average position of participants - Multiple batches per day

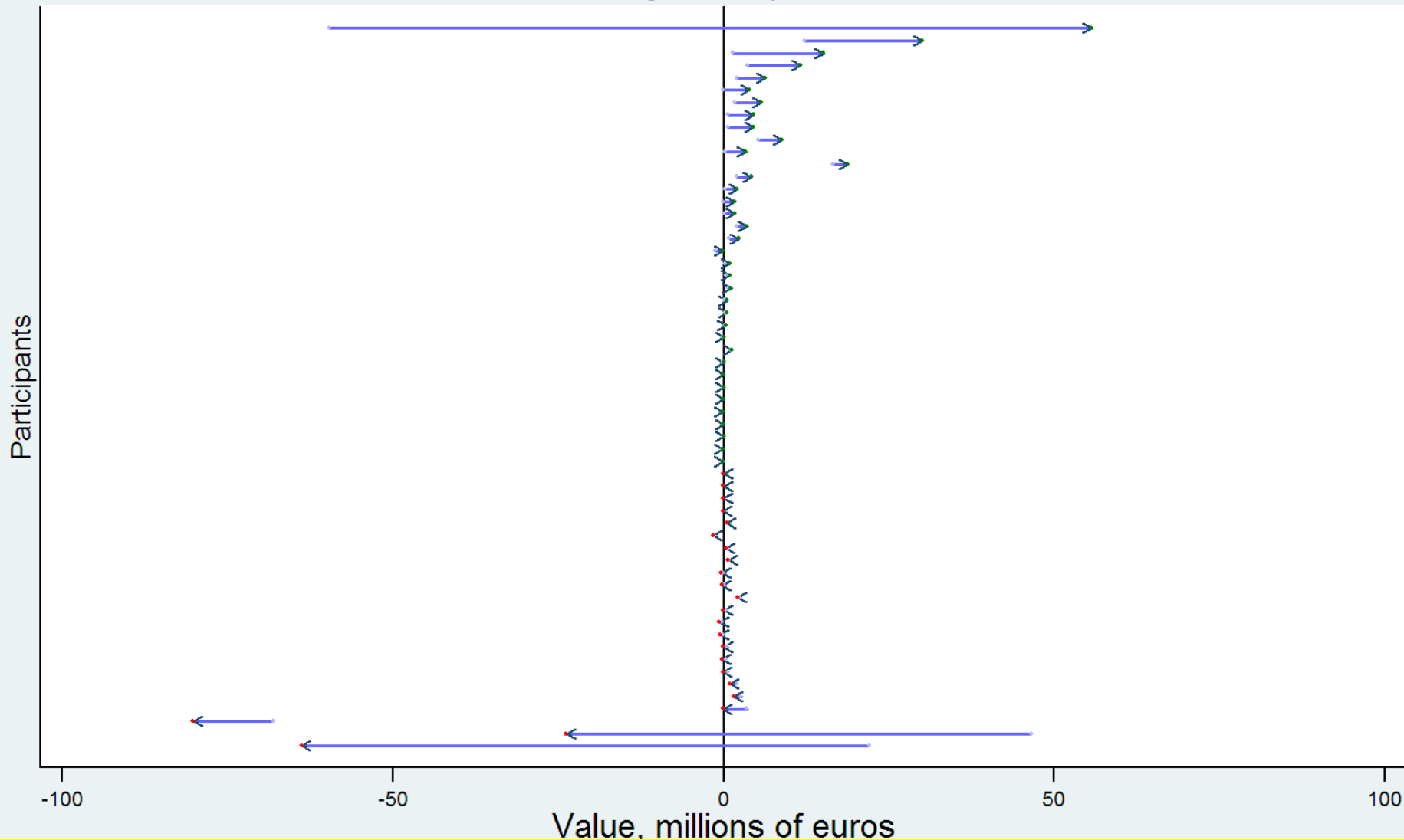
Distribution of Positions of Participants - Multiple Settlement Batches per Day



Graph shows less spreads per settlement batch,  
but it should taken into account that there are 200 batches per day.

# Difference between single and multiple batches at day level

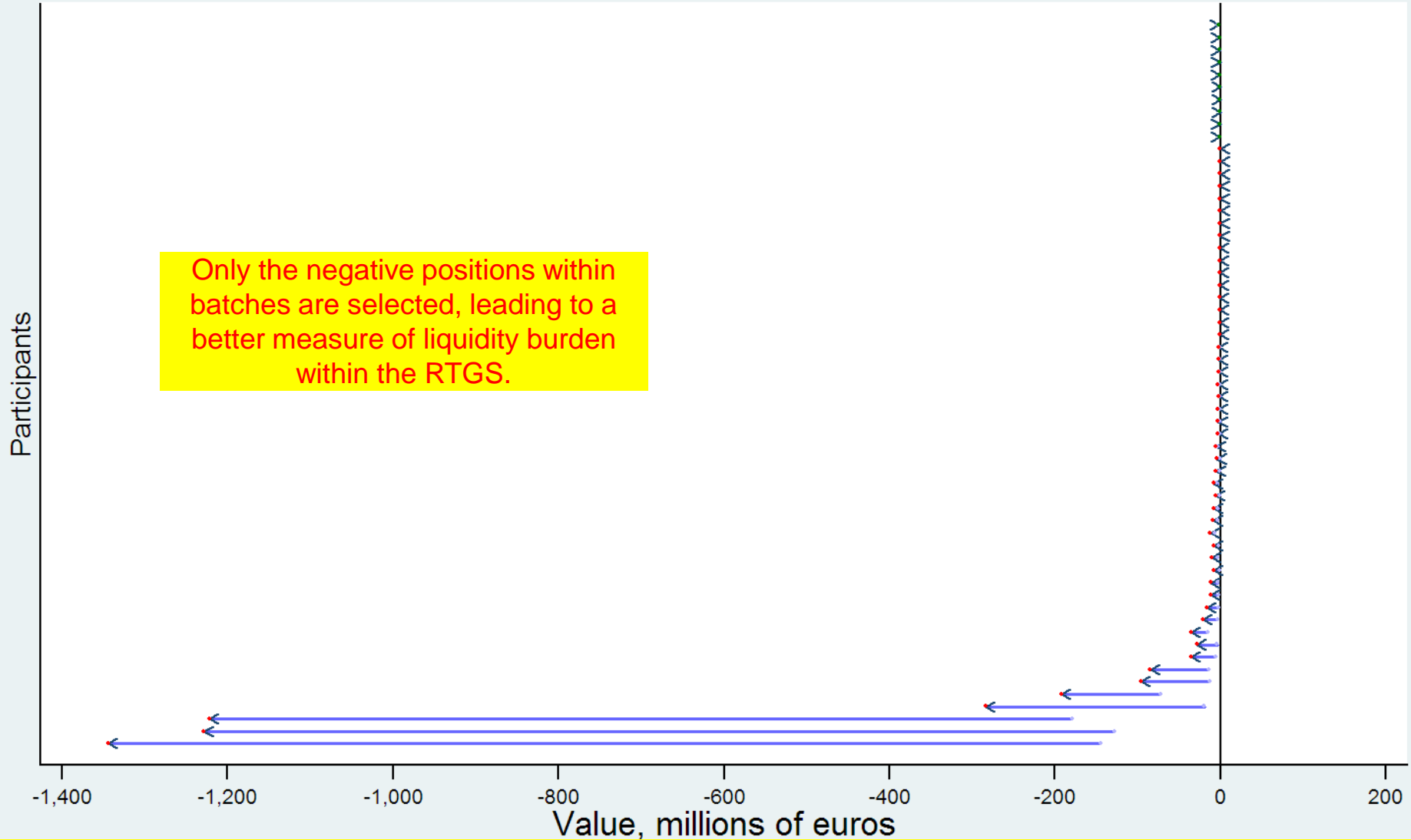
Comparison of Net Liquidity Position Before and After introduction of Multiple Batches per Day  
Both Positive and Negative Daily Positions are included



Participants sorted according to difference before and after introduction of multiple settlement batches per day.  
Total increase of liquidity needs at system level = 9.3 million euros

# Difference between single and multiple batches, only negative positions are included

Comparison of Liquidity Needs Before and After introduction of Multiple Batches per Day  
Only Negative Daily Positions are included



Total increase of liquidity needs at system level = 4.08 billion euros.

PM. Total collateral deposited = 140 bio euros, avg amount Intraday Credit = 12 bio euros.

# Discussion, conclusions, future research

- Liquidity impact of introduction of multiple batches
  - is small but cannot be neglected
  - is observed at only a small portion of participants
  - while others benefit from the new situation
- Analysis of AS settlements takes time (even in case of "home" situation)
- Huge differences observed in TARGET2 therefore exploring Euro landscape will be time consuming
- Desire to generate payment data to create stochastic (perfect) data because the underlying retail transaction data is not available and/or outliers (or liquidity transactions) can disturb the outcome





Thanks for your attention

Kiitos huomiostanne

ja saunaan