

# Voting for insider trading regulation.

## Data analyses script

Dominik Schmidt

Thomas Stöckl

Stefan Palan

## Contents

Variable description . . . . .	1
Majority vote . . . . .	25
Voting behavior . . . . .	29
Voter Migration . . . . .	38
Participation rates and trading activity . . . . .	42
Market quality . . . . .	55
Trader profits . . . . .	59
Observers performance . . . . .	65
EET test . . . . .	65
Participant pool characteristics and questionnaire analyses . . . . .	67
Graphical representation of trading activity . . . . .	69

---

The folder ‘5\_analyses’ provides the codes for (1) data preparation and (2) the analyses shown in the paper. Detailed variable descriptions are provided in ‘2\_analyses\_vote.pdf’.

The file ‘1\_dataPreparation\_vote.R’ scripts the steps from loading files from the folder ‘4\_data\_excel’ to the output of file ‘Data.RData’.

‘Data.RData’ consists of nine data tables: marketsummary, tradersummary, subjects, Votes, observers, transactions, offers, seconds, and avgtraderprofit.

The file ‘2\_analyses\_vote.Rmd’ scripts the analyses in Rmarkdown format, i.e., calculations are in .R format and can be replicated in the R console. Moreover, this file compiles the ‘2\_analyses\_vote.pdf’ as an output.

## Variable description

### marketsummary

The table ‘marketsummary’ summarizes data for each market, i.e. one observation per period and cohort.

Variable	Description
Group	ID variable, which uniquely identifies each session from ‘1’ to ‘32’.
Period	Period index, ranging from ‘1’ to ‘12’.
Period0	Period index, ranging from ‘0’ to ‘5’, indicating the distance to the phase’s first period, starting with 0 to facilitate the interpretation of the intercept.
Phase	Phase index, which is either ‘Phases 1 & 2’ for periods 1 to 6, ‘Phase 3’ for periods 7 to 9, or ‘Phase 4’ or periods 10 to 12.

Variable	Description
Treatment	Treatment index, which is either ‘FIXEDNR’, ‘FIXEDRN’, ‘FLUCTNR’, ‘FLUCTRN’.
subTreatment	Treatment index specifying the regulation in Phases 1 and 3, which is either ‘FIXED’ or ‘FLUCT’.
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either ‘NR’ or ‘RN’.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
IsREG	Regulatory index, which is either ‘REG’ for regulated markets or ‘NOREG’.
Referendum1	Binomial variable which is either ‘REG’ when ‘Referendum 1’ turned out in favor of regulation or ‘NOREG’ otherwise.
Referendum2	Binomial variable which is either ‘REG’ when ‘Referendum 2’ turned out in favor of regulation or ‘NOREG’ otherwise.
transactionVol	Number of assets transacted in a single market.
VolumeUni	Number of assets transacted involving uninformed traders in a single market.
VolumeInf	Number of assets transacted involving informed traders in a single market.
Volume_Informed_Informed	Number of assets offered and accepted by informed traders in a single market.
Volume_Uninformed_Informed	Number of assets offered by uninformed and accepted by informed traders in a single market.
Volume_Informed_Uninformed	Number of assets offered by informed and accepted by uninformed traders in a single market.
Volume_Uninformed_Uninformed	Number of assets offered and accepted by uninformed traders in a single market.
NumTransactions	Number of transactions in a single market.
LimitVol	Number of assets offered in limit orders in a single market.
limitVolumeInf	Number of assets offered in limit orders by informed traders in a single market.
limitVolumeUni	Number of assets offered in limit orders by uninformed traders in a single market.
NumActiveTrader	Number of traders who either placed a limit order or accepted a market order.
HHInitialAssets	Herfindahl–Hirschman index for the initial asset endowment with an alpha of 2.
HHEndAssets	Herfindahl–Hirschman index for the asset endowment at market closing with an alpha of 2.
HHInitialEndowment	Herfindahl–Hirschman index for the initial endowment with an alpha of 2.
HHEndEndowment	Herfindahl–Hirschman index for the endowment at market closing with an alpha of 2.
HHEndEndowmentPun	Herfindahl–Hirschman index for the endowment at market closing after punishment payments with an alpha of 2.
HHVolume	Herfindahl–Hirschman index for the transacted volume with an alpha of 2.

Variable	Description
HHPDbefore	Herfindahl–Hirschman index for the wealth change before redistributions with an alpha of 2.
HHPDPun	Herfindahl–Hirschman index for the wealth change after punishment payments with an alpha of 2.
HHI_InitialAssets	Herfindahl–Hirschman index for the initial asset endowment with an alpha of 2 for active traders.
HHI_EndAssets	Herfindahl–Hirschman index for the asset endowment at market closing with an alpha of 2 for active traders.
HHI_InitialEndowment	Herfindahl–Hirschman index for the initial endowment with an alpha of 2 for active traders.
HHI_EndEndowment	Herfindahl–Hirschman index for the endowment at market closing with an alpha of 2 for active traders.
HHI_EndEndowmentPun	Herfindahl–Hirschman index for the endowment after punishment payment at market closing with an alpha of 2 for active traders.
HHI_Volume	Herfindahl–Hirschman index for the transacted volume with an alpha of 2 for active traders.
HHI_PDbefore	Herfindahl–Hirschman index for the wealth change before redistributions with an alpha of 2 for active traders.
HHI_PDPun	Herfindahl–Hirschman index for the wealth change after punishment payments with an alpha of 2 for active traders.
GiniPDbefore	Gini index for wealth change before redistributions.
GiniPDPun	Gini index for wealth change after punishment payment.
GiniProfit	Gini index for payoffs at market closing after punishment payment.
GiniAssets	Gini index for the initial asset endowment.
GiniEndowment	Gini index for the initial endowment.
BestBid180	Active bid in the order book when market ended which offered the highest bid price.
BestAsk180	Active ask in the order book when market ended which offered assets for the lowest ask price.
BAspread180	Difference between best bid and best ask price when market ended.
midpointBA180	Arithmetic average of the best bid and best ask price when market ended.
BestBid150	Mean best bids in the order book in the last 30 seconds weighted with the seconds providing the highest bid price.
BestAsk150	Mean best asks in the order book in the last 30 seconds weighted with the seconds providing the lowest ask price.
BAspread150	Mean difference between best bid and best ask price in the last 30 seconds each second.
midpointBA150	Mean midpoint between best bid and best ask price in the last 30 seconds each second.
BA_BBV	Difference between the mean midpoints between best bid and best ask prices of the whole time span of one market, and the the buyback value.

Variable	Description
BA_BBV150	Difference between the mean midpoints between best bid and best ask prices in the last 30 seconds, and the the buyback value.
BA_BBV180	Difference between the mean midpoints between best bid and best ask prices when market closes, and the the buyback value.
lnBA_BBV	Logarithmic ratio of the mean midpoints between best bid and best ask prices of the whole time span of one market, and the the buyback value.
meanBestBid	Mean best bids in the order book in the whole time span of a market weighted with the seconds providing the highest bid price.
meanBestAsk	Mean best asks in the order book in the whole time span of a market weighted with the seconds providing the lowest ask price.
meanBASpread	Mean difference between best bid and best ask price each second.
meanmidpointBA	Mean midpoint between best bid and best ask price in the whole time span of a market.
meanBASpreadwins	Mean difference between best bid and best ask price each second after a symmetric 90% winsorization of prices.
meanBASpreadwins2	Mean difference between best bid and best ask price each second after a symmetric 90% winsorization.
meanreturn	Mean price change between transactions.
meanreturnwins	Mean price change between transactions after a symmetric 90% winsorization of prices.
meanreturnwins2	Mean price change between transactions after a symmetric 90% winsorization.
volatility	Standard deviation of transaction price returns within a market.
volatilitywins	Standard deviation of transaction price returns within a market after a symmetric 90% winsorization of prices.
volatilitywins2	Standard deviation of transaction price returns within a market after a symmetric 90% winsorization.
meanreturnPerSecond	Mean price change between seconds.
meanPrice	Mean transaction price within a market.
sdreturnPerSecond	Standard deviation of transaction price returns between seconds.
sdPrice	Standard deviation of transaction prices within a market.
ProfitPotential	Sum absolute difference between the transaction price and the buyback value for each transaction times the transacted volume.
unprofittime	Unexectued Profitable Orders per Time - Money on the table times the time on the market, i.e., profitable price difference between an offer and the fundamental value times the remaining volume times the time span the order is on the market.

Variable	Description
RUPT	Relative Unexecuted Profitable Orders per Time - relative money on the table, i.e., profitable price difference between an offer and the fundamental value times the remaining volume times the time span the order is on the market divided by the fundamental value and divided by the sum of time times volume of all limit orders.
GD	Geometric Deviation - Geometric volume-weighted average relative mispricing within a market.
GAD	Geometric Absolute Deviation - Absolute geometric volume-weighted average relative mispricing within a market.
GADhyp	Hypothetical GAD when prices are set to be the unconditional expected value, 57.5.
rGAD	1 minus the ratio between GAD and the hypothetical GAD.
RD	Relative Deviation - Arithmetic volume-weighted average relative mispricing within a market.
RAD	Relative Absolute Deviation - Absolute arithmetic volume-weighted average relative mispricing within a market.
GD120	Geometric volume-weighted average relative mispricing in the last minute of a market.
GAD120	Absolute geometric volume-weighted average relative mispricing in the last minute of a market.
RD120	Arithmetic volume-weighted average relative mispricing in the last minute of a market.
RAD120	Absolute arithmetic volume-weighted average relative mispricing in the last minute of a market.
rGAD120	1 minus the ratio between GAD120 and the hypothetical GAD120.
NumSelected	Number of scrutinized traders by observer.
NumDetections	Number of correctly selected informed traders by observer.
NumPunished	Number of correctly selected informed traders by observer in REG.
NumMissuspected	Number of incorrectly selected uninformed traders by observer.
Price	Last transaction price in a market.
shortsells	Number of assets sold with negative asset endowment using the short limit capacity.
marginbuysTaler	Money spend to buy assets with negative money endowment using the credit limit.
marginbuysAsset	Purchases with negative money endowments divided by the transaction price.
marginbuys	Purchases with negative money endowments divided by the buyback value.
shortsells_Informed	Number of assets sold with negative asset endowment using the short limit capacity involving informed traders.

Variable	Description
shortsells_Uninformed	Number of assets sold with negative asset endowment using the short limit capacity involving uninformed traders.
marginbuys_Informed	Purchases with negative money endowments divided by the buyback value involving informed traders.
marginbuys_Uninformed	Purchases with negative money endowments divided by the buyback value involving uninformed traders.
marginbuysAsset_Informed	Purchases with negative money endowments divided by the transaction price involving informed traders.
marginbuysAsset_Uninformed	Purchases with negative money endowments divided by the transaction price involving uninformed traders.

### traderssummary

The table ‘traderssummary’ summarizes data for each individual trader in each market, i.e. 9 observations for each period and cohort.

Variable	Description
subjectID	ID variable, which uniquely identifies each participant from ‘1’ to ‘320’ (missing values in the data table were observers).
Group	ID variable, which uniquely identifies each session from ‘1’ to ‘32’.
Date	Date and Program Starting Time of the experimental session in format yymmdd_hhmm.
Subject	ID variable, which identifies participants within an experimental session from ‘1’ to ‘10’.
Period	Period index, ranging from ‘1’ to ‘12’.
Period0	Period index, ranging from ‘0’ to ‘5’, indicating the distance to the phase’s first period, starting with 0 to facilitate the interpretation of the intercept.
Phase	Phase index, which is either ‘Phases 1 & 2’ for periods 1 to 6, ‘Phase 3’ for periods 7 to 9, or ‘Phase 4’ for periods 10 to 12.
Treatment	Treatment index, which is either ‘FIXEDNR’, ‘FIXEDRN’, ‘FLUCTNR’, ‘FLUCTRN’.
subTreatment	Treatment index specifying the regulation in Phases 1 and 3, which is either ‘FIXED’ or ‘FLUCT’.
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either ‘NR’ or ‘RN’.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
IsREG	Regulatory index, which is either ‘REG’ for regulated markets or ‘NOREG’.
Role	Trader type index which is either ‘Informed trader’ or ‘Uninformed trader’.
ExpectedRole	Trader type index which is either ‘FLUCT’ in treatment FLUCT, or ‘Informed trader’ or ‘Uninformed trader’ in treatment FIXED.

Variable	Description
vote1	Binary variable that is either 'REG' when this trader voted in favor of regulation in Referendum 1, or 'NOREG' otherwise.
vote2	Binary variable that is either 'REG' when this trader voted in favor of regulation in Referendum 2, or 'NOREG' otherwise.
vote3	Binary variable that is either 'REG' when this trader voted in favor of regulation in Referendum 3, or 'NOREG' otherwise.
votesallReferenda	Describes the voting behavior of this trader in the three Referenda and is either 'NOREG.NOREG.NOREG', 'NOREG.NOREG.REG', 'NOREG.REG.NOREG', 'NOREG.REG.REG', 'REG.NOREG.NOREG', 'REG.NOREG.REG', 'REG.REG.NOREG', or 'REG.REG.REG'.
votes2Referenda	Describes the voting behavior of this trader in Referenda 1 & 2 and is either 'NOREG.NOREG', 'NOREG.REG', 'REG.NOREG', 'REG.REG'.
Referendum1	Binary variable that is either 'REG' when the Referendum outcome is in favor of regulation in Referendum 1, or 'NOREG' otherwise.
Referendum2	Binary variable that is either 'REG' when the Referendum outcome is in favor of regulation in Referendum 2, or 'NOREG' otherwise.
InitialAssets	Number of assets this participant is endowed at the beginning of this period.
Assets	Number of assets this participants holds at market closing of this period.
InitialMoney	Monetary units this participant is endowed at the beginning of this period.
Money	Monetary units this participants holds at market closing of this period.
InitialEndowment	Initial asset endowment time the buyback value plus the initial monetary units.
EndEndowment	Asset endowment times the buyback value plus the monetary units at market closing before redistributions and punishment.
EndEndowmentPun	Asset endowment times the buyback value plus the monetary units at market closing after redistributions and punishment.
InitialEndowmentUnits	Initial asset endowment value plus initial monetary units divided by the buyback value.
EndEndowmentUnits	Asset endowment plus the monetary units divided by the buyback value at market closing before redistributions and punishment.
EndEndowmentUnitsPun	Asset endowment plus the monetary units divided by the buyback value at market closing after redistributions and punishment.
Unmasked	Binary variable which is either '1' when this trader is informed and correctly identified, or '0' otherwise.

Variable	Description
TradingProfit	Trading profits from market participation in experimental monetary units before redistribution and punishment.
CompensationReceived	Sum of redistribution and punishment payments lost or received.
TPRedist	Trading profits from market participation in experimental monetary units after redistribution.
TPPun	Trading profits from market participation in experimental monetary units after redistribution and punishment.
TPUnits	Trading profits from market participation in asset units (experimental monetary units divided by the buyback value) before redistribution and punishment.
TPUnitsRedist	Trading profits from market participation in asset units after redistribution.
TPUnitsPun	Trading profits from market participation in asset units after redistribution and punishment.
ProfitPeriod	Profit from market participation in Euro after redistribution and punishment.
PDbefore	Wealth change before redistribution and punishment.
PDRedist	Wealth change after redistribution.
PDPun	Wealth change after redistribution and punishment.
PDbeforeVol	Wealth change per transacted asset before redistribution and punishment.
PDRedistVol	Wealth change per transacted asset after redistribution.
PDPunVol	Wealth change per transacted asset after redistribution and punishment.
AvgPDbeforeInf	Arithmetic mean of wealth changes per transacted asset before redistribution and punishment in periods this trader is informed.
AvgPDbeforeUni	Arithmetic mean of wealth changes per transacted asset before redistribution and punishment in periods this trader is uninformed.
rankavgPDbeforeInf	Ordered rank of average wealth change before redistribution and punishment throughout the experiment when informed from '1' (lowest) to '9' (highest).
rankavgPDbeforeUni	Ordered rank of average wealth change before redistribution and punishment throughout the experiment when uninformed from '1' (lowest) to '9' (highest).
rankavgPDbeforeRole	Ordered rank of average wealth changes before redistribution and punishment throughout the experiment compared to traders of the same trader type as this trader in this period.
Volume	Number of assets transacted in a single market.
LimitVolume	Number of assets offered in limit orders in a single market.
CancelledVolume	Number of offered assets withdrawn before market closing.



Variable	Description
MarketVolume	Number of accepted assets in market orders in a single market.
transactedLimitVolume	Number of offered assets accepted by another trader in a single market.
PurchasedVol	Number of assets purchased in a single market.
SoldVol	Number of assets sold in a single market.
Trades	Number of transactions (market and limit) in a single market.
MarketOrders	Number of transactions, for which this trader accepted others' offers in a single market.
LimitTrades	Number of transactions, for which a limit order has been accepted by others in a single market.
LimitOrders	Number of orders placed in a single market.
Purchases	Number of transactions, in which assets have been purchased in a single market.
Sales	Number of transactions, in which assets have been sold in a single market.
active	Binary variable which identifies whether this trader placed any limit order or accepted any market order.
TPUnProfitTransaction	Trading losses from unprofitable transactions in a single market.
VolUnprofitTransaction	Number of assets transacted in unprofitable transactions in a single market.
NumUnprofitTransactions	Number of unprofitable transactions in a single market.
shortsells	Number of assets sold with negative asset endowment using the short limit capacity.
marginbuysTaler	Money spend to buy assets with negative money endowment using the credit limit.
marginbuysAsset	Purchases with negative money endowments divided by the transaction price.
marginbuys	Purchases with negative money endowments divided by the buyback value.
xScore	EET's x-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
yScore	EET's y-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
xScoreAll	EET's x-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).
yScoreAll	EET's y-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).
EET	EET archetypes that are either Selfish, Altruistic, Maximin, Inequality averse, Kiss up, Envious, Spiteful, Kick down, or Non-monotonic.
Unmasked	Observers success to identify this trader when informed that is either 'Punished' in REG, 'Unmasked' in NOREG, 'not unmasked', or 'Uninformed trader'.
Punished	Observers success to identify this trader in REG when informed that is either 1 when punished in REG, or 0 otherwise.

Variable	Description
Role.x	Trader type index for period 'x' that is either 'Informed trader' or 'Uninformed trader'.
ProfitPeriod.x	Profit from market participation in Euro after redistribution and punishment in period 'x'.
TradingProfit.x	Trading profits from market participation in experimental monetary units before redistribution and punishment in period 'x'.
CompensationReceived.x	Sum of redistribution and punishment payments lost or received in period 'x'.
PDbefore.x	Wealth change in period 'x' before redistribution and punishment.
PDRedist.x	Wealth change in period 'x' after redistribution.
PDPun.x	Wealth change in period 'x' after redistribution and punishment.
PDbeforeVol.x	Wealth change in period 'x' per transacted asset before redistribution and punishment.
PDRedistVol.x	Wealth change in period 'x' per transacted asset after redistribution.
PDPunVol.x	Wealth change in period 'x' per transacted asset after redistribution and punishment.
Unmasked.x	Observers success in period 'x' to identify this trader when informed that is either 'Punished' in REG, 'Unmasked' in NOREG, 'not unmasked', or 'Uninformed trader'.
IsREG.x	Regulatory index for period 'x', which is either 'REG' for regulated markets or 'NOREG'.
IsInsider.x	Trader type index for period 'x' that is either 1 for informed traders or 0 otherwise.
PunPerceived	Self-description how punishment is perceived on a Likert scale from 1 (top low) to 7 (too high). PostQ1: 'If a trader with information is correctly selected by the observer, she loses her trading profit and must pay an additional penalty equal to the trading profit. Please indicate whether you consider this penalty to be appropriate, too low, or too high.'
ReasonVote	Self-description of their reasons to vote. PostQ2: 'Please describe concisely why you voted for or against the impact of the observer decisions on traders' period incomes. If you changed your vote during the experiment, what were the reasons?'
ChanceIdentification	Self-description of traders at the end of the experiment how they estimate the probability of a detection of informed traders from 0 to 100. PostQ3: 'How high do you estimate the probability that an observer correctly identifies a trader with information as such.'
StrategyTrader	Self-description of traders at the end of the experiment of their trading strategy. PostQ4: 'What strategies did you use to avoid being recognized by observers as a trader with information?'

Variable	Description
RiskGeneral	Self-description of participants' risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ6: 'How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?'
RiskFinancial	Self-description of participants' financial risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ7: 'People can behave differently in different situations. How would you rate your willingness to take risks in financial matters?'
LossAversion	Self-description of participants loss tolerance at the end of the experiment on a Likert scale from 1 (protection against losses) to 11 (participation to high returns). PostQ8: 'In financial decisions, both gains and losses are possible. To what extent do possible losses compared to possible gains influence you?'
Faculty	Self-description of participants' department of studies. PostQ9: 'Which faculty are you studying at?'
FacultyOther	If they specified other at department, they are asked to specify here their faculty.
age	Self-description of participants' age. PostQ10a: 'Age in years'.
gender	Self-description of participants' gender which can be either 'female', 'male', or 'xdivers'. PostQ10b: 'Gender'
notes	Room for further comments concerning the experiment.

## subjects

The table 'subjects' summarizes data for each individual in each period, i.e. 10 observations for each period and cohort.

Variable	Description
subjectID	ID variable, which uniquely identifies each participant from '1' to '320' (missing values indicate Experimenterg).
Group	ID variable, which uniquely identifies each session from '1' to '32'.
Date	Date and Program Starting Time of the experimental session in format yymmdd_hhmm.
Subject	ID variable, which identifies participants within an experimental session from '1' to '10'.
Period	Period index, ranging from '1' to '12'.
Treatment	Treatment index, which is either 'FIXEDNR', 'FIXEDRN', 'FLUCTNR', 'FLUCTRN'.

Variable	Description
subTreatment	Treatment index specifying the regulation in Phases 1 and 3, which is either ‘FIXED’ or ‘FLUCT’.
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either ‘NR’ or ‘RN’.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
IsREG	Regulatory index, which is either ‘REG’ for regulated markets or ‘NOREG’.
Role	Role index which is either ‘Informed trader’, ‘Uninformed trader’, ‘Observer’, or ‘Experimenter’.
ExpectedRole	Trader type index which is either ‘FLUCT’ in treatment FLUCT, or ‘Informed trader’ or ‘Uninformed trader’ in treatment FIXED.
vote1	Binary variable that is either ‘REG’ when this trader voted in favor of regulation in Referendum 1, ‘NOREG’ when this trader voted against regulation in Referendum 1, or ‘NA’ for observers and experimenter.
vote2	Binary variable that is either ‘REG’ when this trader voted in favor of regulation in Referendum 2, ‘NOREG’ when this trader voted against regulation in Referendum 1, or ‘NA’ for observers and experimenter.
vote3	Binary variable that is either ‘REG’ when this trader voted in favor of regulation in Referendum 3, ‘NOREG’ when this trader voted against regulation in Referendum 1, or ‘NA’ for observers and experimenter.
votesallReferenda	Describes the voting behavior of this trader in the three Referenda and is either ‘NOREG.NOREG.NOREG’, ‘NOREG.NOREG.REG’, ‘NOREG.REG.NOREG’, ‘NOREG.REG.REG’, ‘REG.NOREG.NOREG’, ‘REG.NOREG.REG’, ‘REG.REG.NOREG’, ‘REG.REG.REG’, or ‘NA’ for observers and experimenter.
votes2Referenda	Describes the voting behavior of this trader in Referenda 1 & 2 and is either ‘NOREG.NOREG’, ‘NOREG.REG’, ‘REG.NOREG’, ‘REG.REG’, or ‘NA’ for observers and experimenter.
Referendum1	Binary variable that is either ‘REG’ when the Referendum outcome is in favor of regulation in Referendum 1, or ‘NOREG’ otherwise.
Referendum2	Binary variable that is either ‘REG’ when the Referendum outcome is in favor of regulation in Referendum 2, or ‘NOREG’ otherwise.
IsInsider	Participant role index which is either ‘1’ for informed traders or ‘0’ otherwise.
IsExperimenter	Participant role index which is either ‘1’ for the experimenter or ‘0’ otherwise.

Variable	Description
TotalProfit	Profit from participation in Euro at the end of an experimental session.
ProfitPeriod	Profit from market participation in Euro after redistribution and punishment.
xScore	EET's x-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
yScore	EET's y-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
xScoreAll	EET's x-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).
yScoreAll	EET's y-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).
EET	EET archetypes that are either Selfish, Altruistic, Maximin, Inequality averse, Kiss up, Envious, Spiteful, Kick down, or Non-monotonic.
PunPerceived	Self-description how punishment is perceived on a Likert scale from 1 (top low) to 7 (too high). PostQ1: 'If a trader with information is correctly selected by the observer, she loses her trading profit and must pay an additional penalty equal to the trading profit. Please indicate whether you consider this penalty to be appropriate, too low, or too high.'
ReasonVote	Self-description of their reasons to vote. PostQ2: 'Please describe concisely why you voted for or against the impact of the observer decisions on traders' period incomes. If you changed your vote during the experiment, what were the reasons?'
ChanceIdentification	Self-description of traders at the end of the experiment how they estimate the probability of a detection of informed traders from 0 to 100. PostQ3: 'How high do you estimate the probability that an observer correctly identifies a trader with information as such.'
StrategyTrader	Self-description of traders at the end of the experiment of their trading strategy. PostQ4: 'What strategies did you use to avoid being recognized by observers as a trader with information?'
ObserverStrategy	Self-description of observers at the end of the experiment how they use information: PostQ5: 'Please describe how you think the available information (1. volume limit; 2. volume limit deleted; 3. trading volume limit; 4. trading volume market; 5. volume purchased; 6. volume sold; 7. volume purchased - sold; 8. average price; 9. average volume) can be used to identify informed traders!'
RiskGeneral	Self-description of participants' risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ6: 'How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?'

Variable	Description
RiskFinancial	Self-description of participants' financial risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ7: 'People can behave differently in different situations. How would you rate your willingness to take risks in financial matters?'
LossAversion	Self-description of participants loss tolerance at the end of the experiment on a Likert scale from 1 (protection against losses) to 11 (participation to high returns). PostQ8: 'In financial decisions, both gains and losses are possible. To what extent do possible losses compared to possible gains influence you?'
Faculty	Self-description of participants' department of studies. PostQ9: 'Which faculty are you studying at?'
FacultyOther	If they specified other at department, they are asked to specify here their faculty.
age	Self-description of participants' age. PostQ10a: 'Age in years'.
gender	Self-description of participants' gender which can be either 'female', 'male', or 'xdivers'. PostQ10b: 'Gender'
notes	Room for further comments concerning the experiment.

## Votes

The table 'Votes' summarizes data for each trader in each referendum, i.e. three observations for each cohort and trader constitute 864 observations.

Variable	Description
subjectID	ID variable, which uniquely identifies each participant from '1' to '320' (missing values in the data table were observers).
Group	ID variable, which uniquely identifies each session from '1' to '32'.
Date	Date and Program Starting Time of the experimental session in format yymmdd_hhmm.
Subject	ID variable, which identifies participants within an experimental session from '1' to '10'.
Phase	Phase index, which is either 'Phases 1 & 2' for Referendum 1, 'Phase 3' for Referendum 2, or 'Phase 4' for Referendum 3.
Referendum	Referendum index, which is either 'Referendum 1', 'Referendum 2', or 'Referendum 3'.
Treatment	Treatment index, which is either 'FIXEDNR', 'FIXEDRN', 'FLUCTNR', 'FLUCTRN'.
subTreatment	Treatment index specifying the regulation in Phases 1 and 3, which is either "FIXED" or "FLUCT".

Variable	Description
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either 'NR' or 'RN'.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
ExpectedRole	Trader type index which is either 'FLUCT' in treatment FLUCT, or 'Informed trader' or 'Uninformed trader' in treatment FIXED.
vote	Binary variable that is either 'REG' when this trader voted in favor of regulation in this Referendum, or 'NOREG' otherwise.
vote1	Binary variable that is either 'REG' when this trader voted in favor of regulation in Referendum 1, or 'NOREG' otherwise.
vote2	Binary variable that is either 'REG' when this trader voted in favor of regulation in Referendum 2, or 'NOREG' otherwise.
vote3	Binary variable that is either 'REG' when this trader voted in favor of regulation in Referendum 3, or 'NOREG' otherwise.
votesallReferenda	Describes the voting behavior of this trader in the three Referenda and is either 'NOREG.NOREG.NOREG', 'NOREG.NOREG.REG', 'NOREG.REG.NOREG', 'NOREG.REG.REG', 'REG.NOREG.NOREG', 'REG.NOREG.REG', 'REG.REG.NOREG', or 'REG.REG.REG'.
votes2Referenda	Describes the voting behavior of this trader in Referenda 1 & 2 and is either 'NOREG.NOREG', 'NOREG.REG', 'REG.NOREG', 'REG.REG'.
Referendum1	Binary variable that is either 'REG' when the Referendum outcome is in favor of regulation in Referendum 1, or 'NOREG' otherwise.
Referendum2	Binary variable that is either 'REG' when the Referendum outcome is in favor of regulation in Referendum 2, or 'NOREG' otherwise.
AvgPRREG1	Participation rate of this trader in REG periods in Phases 1 & 2.
AvgPDbeforeREG1	Arithmetic mean of wealth changes per transacted asset before redistribution and punishment in REG periods in Phases 1 & 2.
AvgPDRedistREG1	Arithmetic mean of wealth change after redistribution in REG periods in Phases 1 & 2.
AvgPDPunREG1	Arithmetic mean of wealth change after redistribution and punishment in REG periods in Phases 1 & 2.
AvgPDbeforeVolREG1	Arithmetic mean of wealth change per transacted asset before redistribution and punishment in REG periods in Phases 1 & 2.
AvgPDRedistVolREG1	Arithmetic mean of wealth change per transacted asset after redistribution in REG periods in Phases 1 & 2.

Variable	Description
AvgPDPunVolREG1	Arithmetic mean of wealth change per transacted asset after redistribution and punishment in REG periods in Phases 1 & 2.
AvgPRNOREGREG1	Participation rate of this trader in NOREG periods in REG periods in Phases 1 & 2.
AvgPDbeforeNOREG1	Arithmetic mean of wealth changes per transacted asset before redistribution and punishment in NOREG periods in Phases 1 & 2.
AvgPDRedistNOREG1	Arithmetic mean of wealth change after redistribution in NOREG periods in Phases 1 & 2.
AvgPDPunNOREG1	Arithmetic mean of wealth change after redistribution and punishment in NOREG periods in Phases 1 & 2.
AvgPDbeforeVolNOREG1	Arithmetic mean of wealth change per transacted asset before redistribution and punishment in NOREG periods in Phases 1 & 2.
AvgPDRedistVolNOREG1	Arithmetic mean of wealth change per transacted asset after redistribution in NOREG periods in Phases 1 & 2.
AvgPDPunVolNOREG1	Arithmetic mean of wealth change per transacted asset after redistribution and punishment in NOREG periods in Phases 1 & 2.
AvgPR1	Participation rate of this trader in Phases 1 & 2.
AvgPDbefore1	Arithmetic mean of wealth change before redistribution and punishment in Phases 1 & 2.
AvgPDRedist1	Arithmetic mean of wealth change after redistribution in Phases 1 & 2.
AvgPDPun1	Arithmetic mean of wealth change after redistribution and punishment in Phases 1 & 2.
AvgPDbeforeVol1	Arithmetic mean of wealth change per transacted asset before redistribution and punishment in Phases 1 & 2.
AvgPDRedistVol1	Arithmetic mean of wealth change per transacted asset after redistribution in Phases 1 & 2.
AvgPDPunVol1	Arithmetic mean of wealth change per transacted asset after redistribution and punishment in Phases 1 & 2.
sdProfit	Standard deviation of profits in Euro after redistribution and punishment in Phases 1 & 2.
sdPDbefore1	Standard deviation of wealth change before redistribution and punishment in Phases 1 & 2.
sdPDRedist1	Standard deviation of wealth change after redistribution in Phases 1 & 2.
sdPDPun1	Standard deviation of wealth change after redistribution and punishment in Phases 1 & 2.
sdPDbeforeVol1	Standard deviation of wealth change per transacted asset before redistribution and punishment in Phases 1 & 2.
sdPDRedistVol1	Standard deviation of wealth change per transacted asset after redistribution in Phases 1 & 2.



Variable	Description
sdPDPunVol1	Standard deviation of wealth change per transacted asset after redistribution and punishment in Phases 1 & 2.
xScore	EET's x-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
yScore	EET's y-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
xScoreAll	EET's x-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).
yScoreAll	EET's y-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).
EET	EET archetypes that are either Selfish, Altruistic, Maximin, Inequality averse, Kiss up, Envious, Spiteful, Kick down, or Non-monotonic.
EETMono	EET monotonicity that is either 'Monotonic' or 'Non-monotonic' according to revealed preferences.
Role.x	Trader type index for period 'x' that is either 'Informed trader' or 'Uninformed trader'.
ProfitPeriod.x	Profit from market participation in Euro after redistribution and punishment in period 'x'.
TradingProfit.x	Trading profits from market participation in experimental monetary units before redistribution and punishment in period 'x'.
CompensationReceived.x	Sum of redistribution and punishment payments lost or received in period 'x'.
PDbefore.x	Wealth change in period 'x' before redistribution and punishment.
PDRedist.x	Wealth change in period 'x' after redistribution.
PDPun.x	Wealth change in period 'x' after redistribution and punishment.
PDbeforeVol.x	Wealth change in period 'x' per transacted asset before redistribution and punishment.
PDRedistVol.x	Wealth change in period 'x' per transacted asset after redistribution.
PDPunVol.x	Wealth change in period 'x' per transacted asset after redistribution and punishment.
Unmasked.x	Observers success in period 'x' to identify this trader when informed that is either 'Punished' in REG, 'Unmasked' in NOREG, 'not unmasked', or 'Uninformed trader'.
IsREG.x	Regulatory index for period 'x', which is either 'REG' for regulated markets or 'NOREG'.
IsInsider.x	Trader type index for period 'x' that is either 1 for informed traders or 0 otherwise.
PunPerceived	Self-description how punishment is perceived on a Likert scale from 1 (top low) to 7 (too high). PostQ1: 'If a trader with information is correctly selected by the observer, she loses her trading profit and must pay an additional penalty equal to the trading profit. Please indicate whether you consider this penalty to be appropriate, too low, or too high.'

Variable	Description
ReasonVote	Self-description of their reasons to vote. PostQ2: ‘Please describe concisely why you voted for or against the impact of the observer decisions on traders’ period incomes. If you changed your vote during the experiment, what were the reasons?’
ChanceIdentification	Self-description of traders at the end of the experiment how they estimate the probability of a detection of informed traders from 0 to 100. PostQ3: ‘How high do you estimate the probability that an observer correctly identifies a trader with information as such.’
StrategyTrader	Self-description of traders at the end of the experiment of their trading strategy. PostQ4: ‘What strategies did you use to avoid being recognized by observers as a trader with information?’
RiskGeneral	Self-description of participants’ risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ6: ‘How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?’
RiskFinancial	Self-description of participants’ financial risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ7: ‘People can behave differently in different situations. How would you rate your willingness to take risks in financial matters?’
LossAversion	Self-description of participants loss tolerance at the end of the experiment on a Likert scale from 1 (protection against losses) to 11 (participation to high returns). PostQ8: ‘In financial decisions, both gains and losses are possible. To what extent do possible losses compared to possible gains influence you?’
Faculty	Self-description of participants’ department of studies. PostQ9: ‘Which faculty are you studying at?’
age	Self-description of participants’ age. PostQ10a: ‘Age in years’.
gender	Self-description of participants’ gender which can be either ‘female’, ‘male’, or ‘xdivers’. PostQ10b: ‘Gender’
notes	Room for further comments concerning the experiment.

## observers

The table ‘observers’ summarizes data for each observer in each period, i.e. two observations for each period and cohort.

Variable	Description
subjectID	ID variable, which uniquely identifies each participant from '1' to '320' (missing values indicate Experimenterg).
Group	ID variable, which uniquely identifies each session from '1' to '32'.
Date	Date and Program Starting Time of the experimental session in format yymmdd_hhmm.
Subject	ID variable, which identifies participants within an experimental session from '1' to '10'.
Period	Period index, ranging from '1' to '12'.
Treatment	Treatment index, which is either 'FIXEDNR', 'FIXEDRN', 'FLUCTNR', 'FLUCTRN'.
subTreatment	Treatment index specifying the regulation in Phases 1 & 3, which is either 'FIXED' or 'FLUCT'.
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either 'NR' or 'RN'.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
IsREG	Regulatory index, which is either 'REG' for regulated markets or 'NOREG'.
Role	Role index which is either 'Informed trader', 'Uninformed trader', 'Observer', or 'Experimenter'.
ExpectedRole	Trader type index which is either 'FLUCT' in treatment FLUCT, or 'Informed trader' or 'Uninformed trader' in treatment FIXED.
Referendum1	Binary variable that is either 'REG' when the Referendum outcome is in favor of regulation in Referendum 1, or 'NOREG' otherwise.
Referendum2	Binary variable that is either 'REG' when the Referendum outcome is in favor of regulation in Referendum 2, or 'NOREG' otherwise.
TotalProfit	Profit from participation in Euro at the end of an experimental session.
ProfitPeriod	Profit from market participation in Euro after redistribution and punishment.
NumSelected	Number of traders suspected to be informed after market closing.
NumDetections	Number of traders correctly identified to be informed after market closing.
NumPunished	Number of traders correctly identified to be informed in the regulatory regime REG after market closing.
NumMissuspected	Number of traders incorrectly suspected to be informed after market closing.
xScore	EET's x-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
yScore	EET's y-score from -2.5 to 2.5 (NA for participants with non-monotonic preferences).
xScoreAll	EET's x-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).
yScoreAll	EET's y-score from -2.5 to 2.5 (0 for participants with non-monotonic preferences).

Variable	Description
EET	EET archetypes that are either Selfish, Altruistic, Maximin, Inequality averse, Kiss up, Envious, Spiteful, Kick down, or Non-monotonic.
PunPerceived	Self-description how punishment is perceived on a Likert scale from 1 (top low) to 7 (too high). PostQ1: ‘If a trader with information is correctly selected by the observer, she loses her trading profit and must pay an additional penalty equal to the trading profit. Please indicate whether you consider this penalty to be appropriate, too low, or too high.’
ObserverStrategy	Self-description of observers at the end of the experiment how they use information: PostQ5: ‘Please describe how you think the available information (1. volume limit; 2. volume limit deleted; 3. trading volume limit; 4. trading volume market; 5. volume purchased; 6. volume sold; 7. volume purchased - sold; 8. average price; 9. average volume) can be used to identify informed traders!’.
RiskGeneral	Self-description of participants’ risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ6: ‘How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?’.
RiskFinancial	Self-description of participants’ financial risk tolerance at the end of the experiment on a Likert scale from 1 (not at all willing to take risks) to 11 (very willing to take risks). PostQ7: ‘People can behave differently in different situations. How would you rate your willingness to take risks in financial matters?’.
LossAversion	Self-description of participants loss tolerance at the end of the experiment on a Likert scale from 1 (protection against losses) to 11 (participation to high returns). PostQ8: ‘In financial decisions, both gains and losses are possible. To what extent do possible losses compared to possible gains influence you?’.
Faculty	Self-description of participants’ department of studies. PostQ9: ‘Which faculty are you studying at?’.
FacultyOther	If they specified other at department, they are asked to specify here their faculty.
age	Self-description of participants’ age. PostQ10a: ‘Age in years’.
gender	Self-description of participants’ gender which can be either ‘female’, ‘male’, or ‘xdivers’. PostQ10b: ‘Gender’
notes	Room for further comments concerning the experiment.

## transactions

The table ‘transactions’ summarizes data for each acceptance of a limit order, i.e. one observation per market order.

Variable	Description
transactionID	ID variable, which uniquely identifies each market order from ‘1’ to ‘10830’.
Group	ID variable, which uniquely identifies each session from ‘1’ to ‘32’.
Date	Date and Program Starting Time of the experimental session in format yymmdd_hhmm.
Period	Period index, ranging from ‘1’ to ‘12’.
Treatment	Treatment index, which is either ‘FIXEDNR’, ‘FIXEDRN’, ‘FLUCTNR’, ‘FLUCTRN’.
subTreatment	Treatment index specifying the regulation in Phases 1 and 3, which is either ‘FIXED’ or ‘FLUCT’.
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either ‘NR’ or ‘RN’.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
IsREG	Regulatory index, which is either ‘REG’ for regulated markets or ‘NOREG’.
type	Limit order index specifying whether the liquidity provider offers to buy (‘BuyingOffer’) or to sell (‘SellingOffer’).
TakerID	ID variable, which uniquely identifies the liquidity taker from ‘1’ to ‘320’.
MakerID	ID variable, which uniquely identifies the liquidity provider from ‘1’ to ‘320’.
MakerRole	Trader type index for the liquidity taker which is either ‘Informed trader’ or ‘Uninformed trader’.
TakerRole	Trader type index for the liquidity provider which is either ‘Informed trader’ or ‘Uninformed trader’.
Rolematching	Index how trader types matched that is either ‘ii’ for two informed traders matching, ‘iu’ for an informed trader accepting an uninformed trader’s offer, ‘iu’ for an uninformed trader accepting an informed trader’s offer, or ‘uu*’ for two uninformed traders matching.
BuyerID	ID variable, which uniquely identifies the buying party from ‘1’ to ‘320’.
SellerID	ID variable, which uniquely identifies the selling party from ‘1’ to ‘320’.
Price	Price of the transactions at which the asset is bought and sold.
Pricewins	Price of the transactions at which the asset is bought and sold after a symmetric 90% winsorization of prices.
L.Pricewins	Last price before this market order after a symmetric 90% winsorization of prices.
L.Price	Last price before this market order.
return	Log price change between transactions, i.e., $\ln(\text{‘Price’}) - \ln(\text{‘L.Price’})$ .

Variable	Description
returnwins	Log price change between transactions after a symmetric 90% winsorization of prices.
returnwins2	Log price change between transactions after a symmetric 90% winsorization of returns.
transactionVol	Number of assets transacted via this market order.
remainingOfferVol	Number of assets offered via the respective limit order after the execution of this market order.
SellersProfit	Trading profit in experimental monetary units of the selling party by this market order.
shortsells	Number of assets sold by the selling party with negative asset endowment using the short limit capacity.
marginbuysTaler	Money spend to buy assets by the buying party with negative money endowment using the credit limit.
marginbuysAsset	Purchases by the buying party with negative money endowments divided by the transaction price.
time	Time in seconds that has been passed since the start of the auction until the market order was executed.

## offers

The table ‘offers’ summarizes data for each placement of a limit order, i.e. one observation per limit order.

Variable	Description
offerID	ID variable, which uniquely identifies each limit order from ‘1’ to ‘15572’.
Group	ID variable, which uniquely identifies each session from ‘1’ to ‘32’.
Date	Date and Program Starting Time of the experimental session in format yymmdd_hhmm.
Period	Period index, ranging from ‘1’ to ‘12’.
Treatment	Treatment index, which is either ‘NN.NR.RR’, ‘NN.RN.RR’, ‘RR.NR.NN’, ‘RR.NR.RR’, ‘RR.RN.NN’, or ‘RR.RN.RR’.
Period	Period index, ranging from ‘1’ to ‘12’.
Treatment	Treatment index, which is either ‘FIXEDNR’, ‘FIXEDRN’, ‘FLUCTNR’, ‘FLUCTRN’.
subTreatment	Treatment index specifying the regulation in Phases 1 and 3, which is either ‘FIXED’ or ‘FLUCT’.
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either ‘NR’ or ‘RN’.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
IsREG	Regulatory index, which is either ‘REG’ for regulated markets or ‘NOREG’.
type	Limit order index specifying whether the liquidity provider offers to buy (‘BuyingOffer’) or to sell (‘SellingOffer’).

Variable	Description
status	Limit order index, which is either ‘cancelled’ if this limit order got cancelled somewhere throughout the auction, ‘on market’ if this limit order remained in the order book at market closing, ‘sold out’ when all assets were accepted by another party, or ‘fully invalidated’ when they are no longer feasible at market closing.
MakerID	ID variable, which uniquely identifies the liquidity provider from ‘1’ to ‘320’.
MakerRole	Trader type index for the liquidity taker which is either ‘Informed trader’ or ‘Uninformed trader’.
Price	Price of the limit order at which the asset is offered to buy or sell.
Volume	Number of assets offered via this limit order.
limitVolume	Number of assets offered via this limit order.
TotTransacted	Number of assets transacted via this limit order.
offerStart	Time in seconds that has been passed since the start of the auction until the limit order was placed.
offerEnd	Time in seconds that has been passed since the start of the auction until the end of the respective limit order, i.e., either at market closing, withdrawal, or when the limit order sold out.

## seconds

The table ‘seconds’ summarizes data for each second within each market, i.e. 180 observations per period and cohort.

Variable	Description
Group	ID variable, which uniquely identifies each session from ‘1’ to ‘32’.
Date	Date and Program Starting Time of the experimental session in format yymmdd_hhmm.
Period	Period index, ranging from ‘1’ to ‘12’.
Period0	Period index, ranging from ‘0’ to ‘5’, indicating the distance to the phase’s first period, starting with 0 to facilitate the interpretation of the intercept.
Treatment	Treatment index, which is either ‘FIXEDNR’, ‘FIXEDRN’, ‘FLUCTNR’, ‘FLUCTRN’.
subTreatment	Treatment index specifying the regulation in Phases 1 and 3, which is either ‘FIXED’ or ‘FLUCT’.
regime_order	Treatment index specifying the order of market regulation in Phase 2, which is either ‘NR’ or ‘RN’.
BBV	Buyback Value.
BBVCent	Buyback Value centralized by the unconditional expected value of 57.5.
IsREG	Regulatory index, which is either ‘REG’ for regulated markets or ‘NOREG’.
MA	Moving average of transaction volume with past volume being weighted by $\{\frac{1}{2}^n \mid n \in \{1, 2, \dots, 8, 9, 9\}\}$ .

Variable	Description
BestBid	Active bid in the order book at this time which offered the highest bid price.
BestAsk	Active ask in the order book at this time which offered assets for the lowest ask price.
BAspread	Difference between best bid and best ask price each second.
midpointBA	Midpoint between best bid and best ask price each second.
BestBidwins	Active bid in the order book at this time which offered the highest bid price after a symmetric 90% winsorization of prices.
BestAskwins	Active ask in the order book at this time which offered assets for the lowest ask price after a symmetric 90% winsorization of prices.
BAspreadwins	Difference between best bid and best ask price each second after a symmetric 90% winsorization of prices.
BAspreadwins2	Difference between best bid and best ask price each second after a symmetric 90% winsorization of spreads.
lastPrice	Last transaction price in a market before this second.
lnlastPrice	Log transformed last transaction price in a market.
L.lnlastPrice	Log transformed price in a market in the previous second.
return	Log-change in prices between last seconds.

### avgtraderprofit

The table ‘avgtraderprofit’ summarizes data for each individual trader, i.e. 9 observations for each cohort.

Variable	Description
subjectID	ID variable, which uniquely identifies each participant from ‘1’ to ‘320’ (missing values in the data table were observers).
Group	ID variable, which uniquely identifies each session from ‘1’ to ‘32’.
AvgPDbeforeInf	Arithmetic mean of wealth changes per transacted asset before redistribution and punishment in periods this trader is informed.
AvgPDbeforeUni	Arithmetic mean of wealth changes per transacted asset before redistribution and punishment in periods this trader is uninformed.
rankavgPDbeforeInf	Ordered rank of average wealth change before redistribution and punishment throughout the experiment when informed from ‘1’ (lowest) to ‘9’ (highest).
rankavgPDbeforeUni	Ordered rank of average wealth change before redistribution and punishment throughout the experiment when uninformed from ‘1’ (lowest) to ‘9’ (highest).



## Majority vote

Test treatment differences in Referenda 1 & 2 reported in Result 2 in Section 3.1

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(voteGroup, Referendum != "Referendum 3" & subTreatment == "FIXED")$Vote > 4), sum
## X-squared = 6.7869, df = 1, p-value = 0.009183
## alternative hypothesis: two.sided
## 95 percent confidence interval:
##  0.09299519 0.59450481
## sample estimates:
##  prop 1  prop 2
## 0.53125 0.18750
```

Table 10: [Table 1:] Mixed effects logit and Poisson regressions of (majority) votes in favor of regulation by referendum.

	(1) Logit	(2) Logit	(3) Poisson	(4) Poisson
(Intercept)	-2.41*** (0.71)	-1.76* (0.73)	1.00*** (0.14)	1.06*** (0.16)
subTreatmentFIXED	1.72** (0.61)	0.69 (0.84)	0.38** (0.13)	0.28 (0.19)
regime_orderRN	1.15 (0.60)	-0.00 (0.91)	0.08 (0.13)	-0.04 (0.20)
ReferendumReferendum 2	0.50 (0.58)	0.54 (0.60)	0.11 (0.13)	0.11 (0.13)
subTreatmentFIXED:regime_orderRN		1.92 (1.21)		0.20 (0.27)
mu(Intercept)	0.08	0.15	2.73	2.89
Avg. predicted probability	0.36	0.36	3.70	3.70
McFadden R <sup>2</sup>	0.15	0.18	0.04	0.04
AIC	80.48	79.95	246.58	248.02
BIC	91.28	92.91	257.37	260.97
Log Likelihood	-35.24	-33.98	-118.29	-118.01
Num. obs.	64	64	64	64
Num. groups: Group	32	32	32	32
Var: Group (Intercept)	0.00	0.00	0.00	0.00

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

Test treatment differences in Referenda 1 & 2 (in setting RN) based on Model 2 of Table 1 reported in Result 2 in Section 3.1

```
## Linear hypothesis test
##
## Hypothesis:
## subTreatmentFIXED + regime_orderRN + subTreatmentFIXED:regime_orderRN = 0
##
## Model 1: restricted model
## Model 2: (Vote >= 5) ~ subTreatment * regime_order + Referendum + (1 |
##      Group)
##
##      Df  Chisq Pr(>Chisq)
## 1
```

```
## 2 1 8.9224 0.002817 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Table 11: [Table OA1:] Logit and Poisson regressions of (majority) votes in favor of regulation by referendum (all referenda).

	(1) Log all ref	(2) Log Ref 2	(3) Log Ref 3	(4) Poi all ref	(2) Poi Ref 2	(3) Poi Ref 3
(Intercept)	−2.30*** (0.69)	−1.02 (0.83)	−1.95 (1.07)	1.06*** (0.14)	1.22*** (0.19)	1.35*** (0.18)
FIXED	1.35 (0.71)	0.69 (1.11)	2.46 (1.29)	0.25 (0.15)	0.29 (0.26)	0.20 (0.24)
orderRN	1.16 (0.71)	−0.77 (1.35)	3.04* (1.35)	0.06 (0.16)	−0.20 (0.29)	0.20 (0.24)
Referendum 2	0.51 (0.59)			0.11 (0.13)		
Referendum 3	1.29* (0.59)			0.30* (0.12)		
FIXED : RN	0.37 (0.96)	3.60 (1.97)	−2.46 (1.73)	0.09 (0.21)	0.32 (0.37)	−0.06 (0.33)
Referendum 1 REG		−0.79 (1.22)			−0.04 (0.21)	
mu(Intercept)	0.09	0.27	0.13	2.89	3.39	3.88
Avg. predicted probability	0.43	0.41	0.56	4.04	3.91	4.72
McFadden R <sup>2</sup>	0.17	0.28	0.21	0.04	0.06	0.02
AIC	121.83	41.16	42.61	371.19	124.46	127.55
BIC	139.78	48.49	48.47	389.14	131.79	133.42
Log Likelihood	−53.91	−15.58	−17.30	−178.60	−57.23	−59.78
Num. obs.	96	32	32	96	32	32
Num. groups: Group	32			32		
Var: Group (Intercept)	0.00			0.00		
Deviance		31.16	34.61		13.58	11.55

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

Figure 1: [Figure OA1:] Share of referenda in favor of regulation by treatment and starting regime.

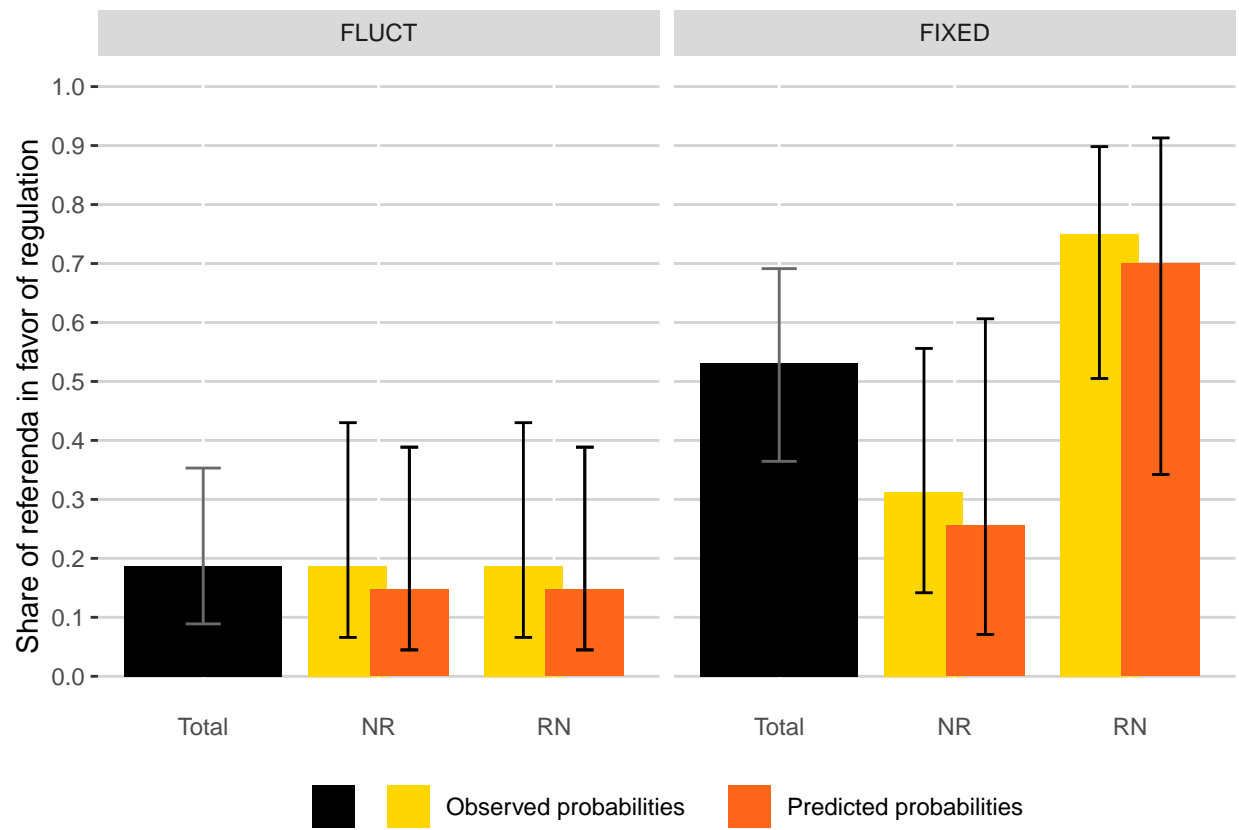
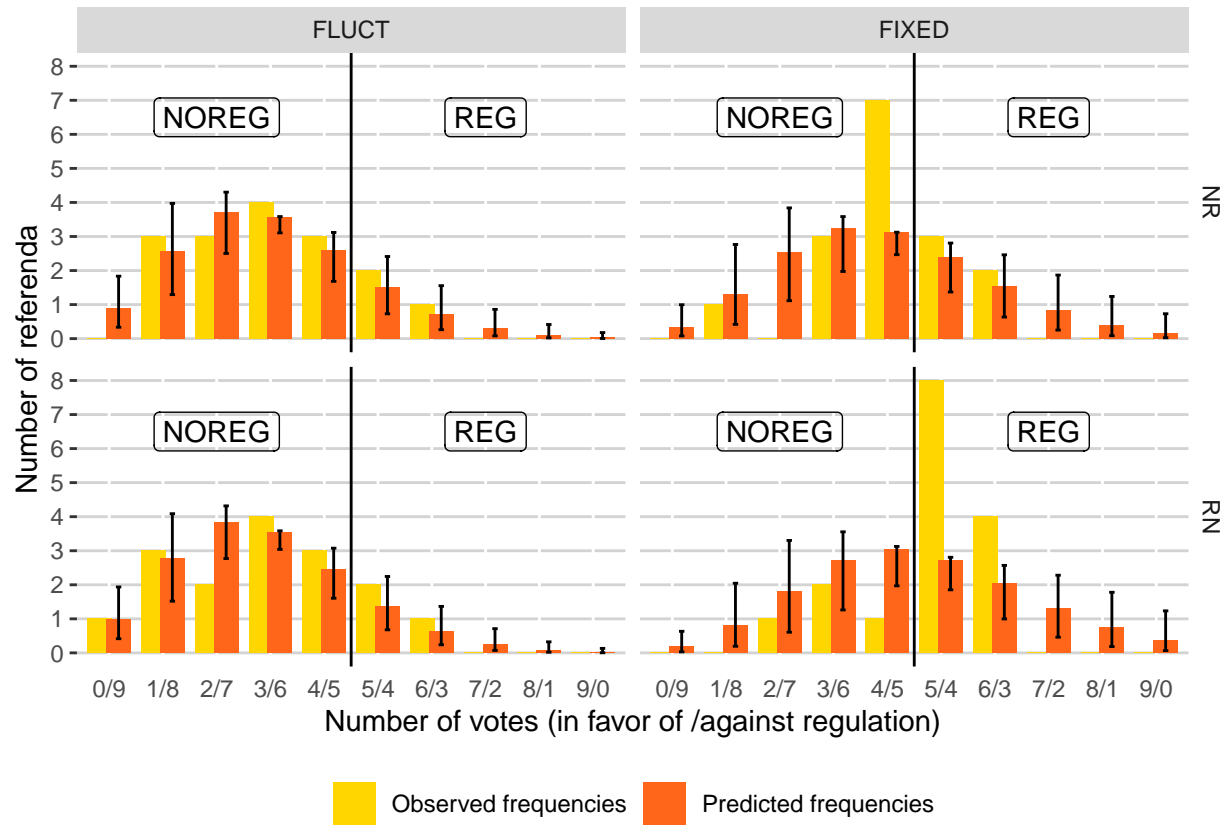


Figure 2: [Figure 2:] Distribution of votes by treatment and starting regime.



## Voting behavior

Test REG votes in Referenda 1 & 2 against Referendum 3 for informed traders in treatment FIXED reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(Votes, Referendum != "Referendum 3" & ExpectedRole == "Informed trader")$vote ==
## X-squared = 4.7368, df = 1, p-value = 0.02952
## alternative hypothesis: two.sided
## 95 percent confidence interval:
## -0.2925843397  0.0009176731
## sample estimates:
##      prop 1      prop 2
## 0.08333333 0.22916667
```

Test REG voters in Referenda 1 & 2 against Referendum 3 for informed traders in treatment FIXED reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(Votes, Referendum == "Referendum 1" & ExpectedRole == "Informed trader")$votes2R
## X-squared = 0.26247, df = 1, p-value = 0.6084
## alternative hypothesis: two.sided
## 95 percent confidence interval:
## -0.2422441  0.1172441
## sample estimates:
##      prop 1      prop 2
## 0.1666667 0.2291667
```

Test REG votes in Referenda 1 & 2 against Referendum 3 for uninformed traders in treatment FIXED reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(Votes, Referendum != "Referendum 3" & ExpectedRole == "Uninformed trader")$vote
## X-squared = 0.47269, df = 1, p-value = 0.4918
## alternative hypothesis: two.sided
## 95 percent confidence interval:
## -0.16407583  0.07032583
## sample estimates:
##      prop 1      prop 2
## 0.6927083 0.7395833
```

Test REG voters in Referenda 1 & 2 against Referendum 3 for uninformed traders in treatment FIXED reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(Votes, Referendum == "Referendum 1" & ExpectedRole == "Uninformed trader")$votes
## X-squared = 1.0788, df = 1, p-value = 0.299
## alternative hypothesis: two.sided
## 95 percent confidence interval:
## -0.0549861  0.2008194
```

```
## sample estimates:
##      prop 1      prop 2
## 0.8125000 0.7395833
```

Test NOREG voters in Referenda 1 & 2 against Referendum 3 for uninformed traders in treatment FIXED reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(Votes, Referendum == "Referendum 1" & ExpectedRole == "Uninformed trader")$votes)
## X-squared = 5.1948, df = 1, p-value = 0.02265
## alternative hypothesis: two.sided
## 95 percent confidence interval:
##  0.02397013 0.30936320
## sample estimates:
##      prop 1      prop 2
## 0.4270833 0.2604167
```

Test REG votes between Referenda 1 & 2 for treatment FLUCT reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(Votes, Referendum == "Referendum 1" & ExpectedRole == "FLUCT")$vote == "REG"), s
## X-squared = 0.015625, df = 1, p-value = 0.9005
## alternative hypothesis: two.sided
## 95 percent confidence interval:
##  -0.1297084  0.1019306
## sample estimates:
##      prop 1      prop 2
## 0.3263889 0.3402778
```

Test REG votes in Referenda 1 & 2 against Referendum 3 for treatment FLUCT reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data:  c(sum(subset(Votes, Referendum != "Referendum 3" & ExpectedRole == "FLUCT")$vote == "REG"), s
## X-squared = 8.0421, df = 1, p-value = 0.00457
## alternative hypothesis: two.sided
## 95 percent confidence interval:
##  -0.24913198 -0.04253469
## sample estimates:
##      prop 1      prop 2
## 0.3333333 0.4791667
```

Test REG voters in Referenda 1 & 2 against Referendum 3 for treatment FLUCT reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions without continuity correction
##
## data:  c(sum(subset(Votes, Referendum == "Referendum 1" & ExpectedRole == "FLUCT")$votes2Referenda !
## X-squared = 5.3853e-30, df = 1, p-value = 1
## alternative hypothesis: two.sided
```

```
## 95 percent confidence interval:
## -0.1153917 0.1153917
## sample estimates:
## prop 1 prop 2
## 0.4791667 0.4791667
```

Test NOREG voters in Referenda 1 & 2 against Referendum 3 for treatment FLUCT reported in the Online Appendix in Section 2.3

```
##
## 2-sample test for equality of proportions with continuity correction
##
## data: c(sum(subset(Votes, Referendum == "Referendum 1" & ExpectedRole == "FLUCT")$votes2Referenda !
## X-squared = 26.266, df = 1, p-value = 2.975e-07
## alternative hypothesis: two.sided
## 95 percent confidence interval:
## 0.1811768 0.4021566
## sample estimates:
## prop 1 prop 2
## 0.8125000 0.5208333
```

Table 12: [Table 2:] Mixed effects regressions of voting behavior on regulation.

	(1) indiv. vote	(2) incl. EET	(3) cons. and act.
(Intercept)	−0.71** (0.24)	−1.04*** (0.30)	−0.97** (0.33)
ExpectedRoleInformed trader	−1.23 (0.66)	−1.03 (0.98)	−1.61 (1.30)
ExpectedRoleUninformed trader	0.94* (0.37)	1.69*** (0.47)	1.72*** (0.50)
AvgPDbefore1	−4.48 (2.30)	−4.57 (2.36)	−4.24 (2.37)
regime_orderRN	−0.07 (0.29)	−0.01 (0.29)	−0.12 (0.34)
ReferendumReferendum 2	0.06 (0.25)	0.07 (0.26)	0.04 (0.28)
ExpectedRoleInformed trader:AvgPDbefore1	−3.46 (4.25)	−5.37 (4.84)	−8.97 (5.92)
ExpectedRoleUninformed trader:AvgPDbefore1	6.69* (3.19)	6.70* (3.33)	7.49* (3.47)
ExpectedRoleInformed trader:regime_orderRN	−0.37 (0.86)	−0.32 (0.97)	0.51 (1.23)
ExpectedRoleUninformed trader:regime_orderRN	0.76 (0.46)	0.67 (0.47)	0.61 (0.55)
ExpectedRoleInformed trader:ReferendumReferendum 2	−0.69 (0.84)	−0.70 (0.85)	−2.12 (1.28)
ExpectedRoleUninformed trader:ReferendumReferendum 2	0.61 (0.41)	0.63 (0.42)	0.49 (0.46)
xScoreAll		−0.09 (0.20)	−0.05 (0.21)
yScoreAll		0.13 (0.14)	0.15 (0.15)
EETMonoNon-monotonic		1.98*** (0.58)	
xScoreAll:yScoreAll		0.17 (0.10)	0.14 (0.10)
ExpectedRoleInformed trader:xScoreAll		0.22 (0.56)	0.59 (0.67)
ExpectedRoleUninformed trader:xScoreAll		0.57 (0.30)	0.51 (0.31)
ExpectedRoleInformed trader:yScoreAll		−0.34 (0.53)	−0.22 (0.58)
ExpectedRoleUninformed trader:yScoreAll		−0.35 (0.25)	−0.32 (0.26)
ExpectedRoleInformed trader:EETMonoNon-monotonic		−1.93 (1.48)	
ExpectedRoleUninformed trader:EETMonoNon-monotonic		−2.60*** (0.77)	
ExpectedRoleInformed trader:xScoreAll:yScoreAll		−0.56 (0.36)	−0.81 (0.44)
ExpectedRoleUninformed trader:xScoreAll:yScoreAll		−0.58** (0.19)	−0.55** (0.20)
mu(Intercept)	0.33	0.26	0.27
Avg. predicted probability	0.41	0.41	0.40
McFadden R <sup>2</sup>	0.18	0.21	0.21
AIC	663.65	660.79	563.57
BIC	720.28	769.69	655.94
Log Likelihood	−318.83	−305.40	−259.78
Num. obs.	576	576	492
Num. groups: Group	32	32	32
Var: Group (Intercept)	0.08	0.05	0.13



Test trader type differences in Referenda 1 & 2 based on Model 2 of Table 2 reported in Result 3 in Section 3.2

```
## Linear hypothesis test
##
## Hypothesis:
## - ExpectedRoleInformed trader + ExpectedRoleUninformed trader = 0
##
## Model 1: restricted model
## Model 2: vote ~ ExpectedRole + AvgPDbefore1 + regime_order + Referendum +
## (1 | Group) + ExpectedRole:AvgPDbefore1 + ExpectedRole:regime_order +
## ExpectedRole:Referendum
##
## Df Chisq Pr(>Chisq)
## 1
## 2 1 10.81 0.001009 **
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Test against a 50-50 choice for traders in treatment FLUCT in Referenda 1 & 2 based on Model 2 of Table 2 reported in Result 3 in Section 3.2

```
## Linear hypothesis test
##
## Hypothesis:
## (Intercept) = 0
##
## Model 1: restricted model
## Model 2: vote ~ ExpectedRole + AvgPDbefore1 + regime_order + Referendum +
## (1 | Group) + ExpectedRole:AvgPDbefore1 + ExpectedRole:regime_order +
## ExpectedRole:Referendum
##
## Df Chisq Pr(>Chisq)
## 1
## 2 1 8.6084 0.003346 **
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Test against a 50-50 choice for informed traders in treatment FIXED in Referenda 1 & 2 based on Model 2 of Table 2 reported in Result 3 in Section 3.2

```
## Linear hypothesis test
##
## Hypothesis:
## (Intercept) + ExpectedRoleInformed trader = 0
##
## Model 1: restricted model
## Model 2: vote ~ ExpectedRole + AvgPDbefore1 + regime_order + Referendum +
## (1 | Group) + ExpectedRole:AvgPDbefore1 + ExpectedRole:regime_order +
## ExpectedRole:Referendum
##
## Df Chisq Pr(>Chisq)
## 1
## 2 1 10.047 0.001526 **
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Test against a 50-50 choice for uninformed traders in treatment FIXED in Referenda 1 & 2 based on Model 2 of Table 2 reported in Result 3 in Section 3.2

```
## Linear hypothesis test
##
## Hypothesis:
## (Intercept) + ExpectedRoleUninformed trader = 0
##
## Model 1: restricted model
## Model 2: vote ~ ExpectedRole + AvgPDbefore1 + regime_order + Referendum +
## (1 | Group) + ExpectedRole:AvgPDbefore1 + ExpectedRole:regime_order +
## ExpectedRole:Referendum
##
## Df Chisq Pr(>Chisq)
## 1
## 2 1 0.6367 0.4249
```

Test the influence of uninformed traders' ability to generate profits in treatment FIXED in Referenda 1 & 2 based on Model 2 of Table 2 reported in Result 3 in Section 3.2

```
## Linear hypothesis test
##
## Hypothesis:
## AvgPDbefore1 + ExpectedRoleUninformed trader:AvgPDbefore1 = 0
##
## Model 1: restricted model
## Model 2: vote ~ ExpectedRole + AvgPDbefore1 + regime_order + Referendum +
## (1 | Group) + ExpectedRole:AvgPDbefore1 + ExpectedRole:regime_order +
## ExpectedRole:Referendum
##
## Df Chisq Pr(>Chisq)
## 1
## 2 1 1.0013 0.317
```

Test the influence of EET scores in Referenda 1 & 2 based on Model 2 of Table 2 reported in Result 3 in Section 3.2

```
## Linear hypothesis test
##
## Hypothesis:
## xScoreAll = 0
## yScoreAll = 0
## xScoreAll:yScoreAll = 0
## ExpectedRoleInformed trader:xScoreAll = 0
## ExpectedRoleInformed trader:yScoreAll = 0
## ExpectedRoleInformed trader:xScoreAll:yScoreAll = 0
## ExpectedRoleUninformed trader:xScoreAll = 0
## ExpectedRoleUninformed trader:yScoreAll = 0
## ExpectedRoleUninformed trader:xScoreAll:yScoreAll = 0
##
## Model 1: restricted model
## Model 2: vote ~ ExpectedRole + AvgPDbefore1 + regime_order + Referendum +
## xScoreAll + yScoreAll + EETMono + (1 | Group) + ExpectedRole:AvgPDbefore1 +
## ExpectedRole:regime_order + ExpectedRole:Referendum + xScoreAll:yScoreAll +
## ExpectedRole:xScoreAll + ExpectedRole:yScoreAll + ExpectedRole:EETMono +
## ExpectedRole:xScoreAll:yScoreAll
```

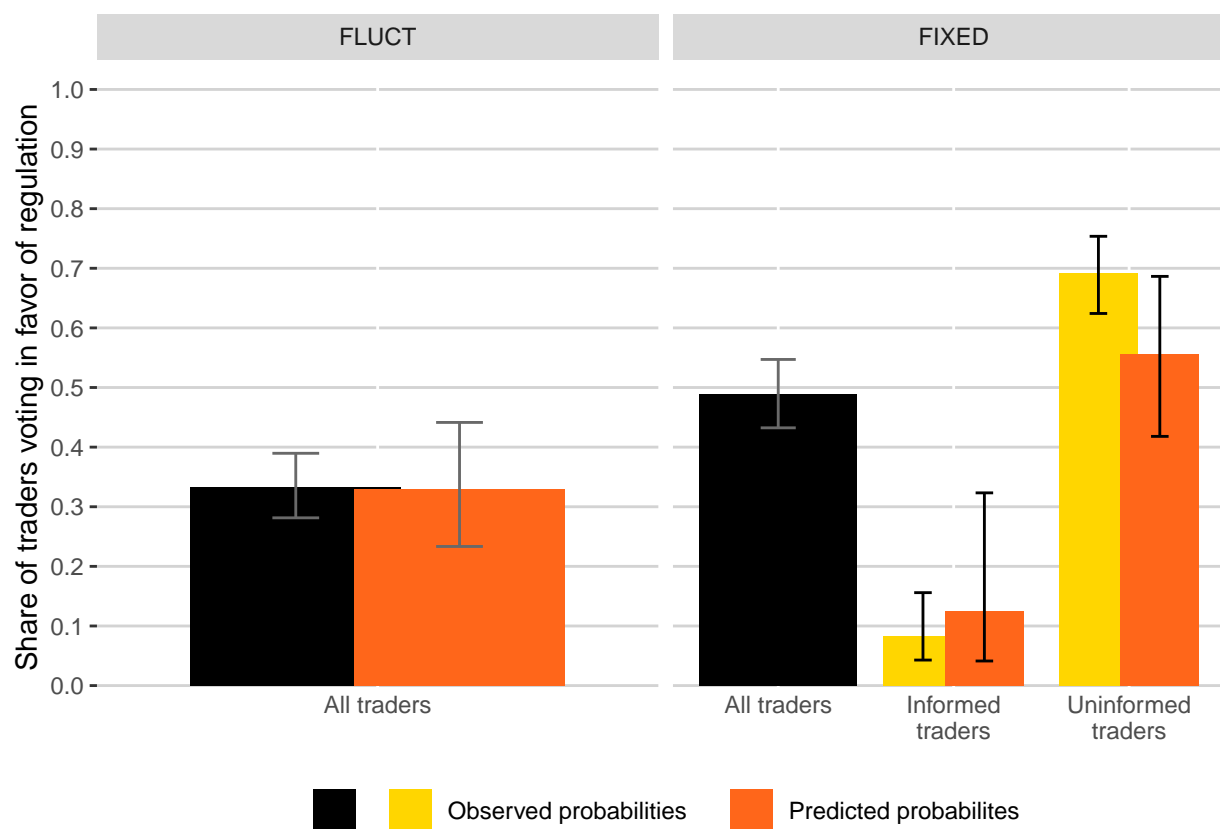
```
##
##   Df   Chisq Pr(>Chisq)
## 1
## 2   9 13.775    0.1305
```

Table 13: [Table OA2:] Logit regression of voting behavior on regulation.

	(1) all ref.	(2) Ref. 2	(3) Ref. 3
(Intercept)	−0.80*** (0.23)	−0.52* (0.25)	−0.28 (0.24)
ExpectedRoleInformed trader	−1.16* (0.59)	−1.28 (0.78)	−0.78 (0.53)
ExpectedRoleUninformed trader	1.00** (0.36)	1.40** (0.43)	0.98* (0.39)
AvgPDbefore1	−3.65* (1.84)	−3.43 (3.13)	−1.99 (2.99)
regime_orderRN	0.10 (0.25)	−0.32 (0.36)	0.39 (0.34)
ReferendumReferendum 2	0.06 (0.25)		
ReferendumReferendum 3	0.66** (0.25)		
ExpectedRoleInformed trader:AvgPDbefore1	−1.56 (3.21)	−9.41 (9.91)	0.14 (4.56)
ExpectedRoleUninformed trader:AvgPDbefore1	5.28* (2.59)	8.64 (4.67)	2.21 (4.37)
ExpectedRoleInformed trader:regime_orderRN	−0.43 (0.60)	−15.66 (1105.96)	−0.61 (0.77)
ExpectedRoleUninformed trader:regime_orderRN	0.62 (0.40)	1.22 (0.65)	0.38 (0.59)
ExpectedRoleInformed trader:ReferendumReferendum 2	−0.64 (0.82)		
ExpectedRoleUninformed trader:ReferendumReferendum 2	0.61 (0.41)		
ExpectedRoleInformed trader:ReferendumReferendum 3	0.33 (0.65)		
ExpectedRoleUninformed trader:ReferendumReferendum 3	−0.10 (0.41)		
Referendum1REG		0.03 (0.46)	
ExpectedRoleInformed trader:Referendum1REG		−14.53 (1178.64)	
ExpectedRoleUninformed trader:Referendum1REG		−0.05 (0.71)	
mu(Intercept)	0.31	0.37	0.43
Avg. predicted probability	0.45	0.43	0.52
McFadden R <sup>2</sup>	0.16	0.25	0.11
AIC	1027.70	319.72	374.24
BIC	1103.88	363.67	407.21
Log Likelihood	−497.85	−147.86	−178.12
Num. obs.	864	288	288
Num. groups: Group	32		
Var: Group (Intercept)	0.09		
Deviance		295.72	356.24

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

Figure 3: [Figure OA2:] Share of traders voting in favor of regulation by treatment and trader type.



## Voter Migration

##		FLUCT	Informed trader	Uninformed trader
##	NOREG.NOREG.NOREG	50	31	14
##	NOREG.NOREG.REG	25	9	4
##	NOREG.REG.NOREG	8	2	4
##	NOREG.REG.REG	14	1	14
##	REG.NOREG.NOREG	12	4	3
##	REG.NOREG.REG	8	1	2
##	REG.REG.NOREG	5	0	4
##	REG.REG.REG	22	0	51

Figure 4: [Figure OA3:] Voter migration between referenda by treatment and trader type.

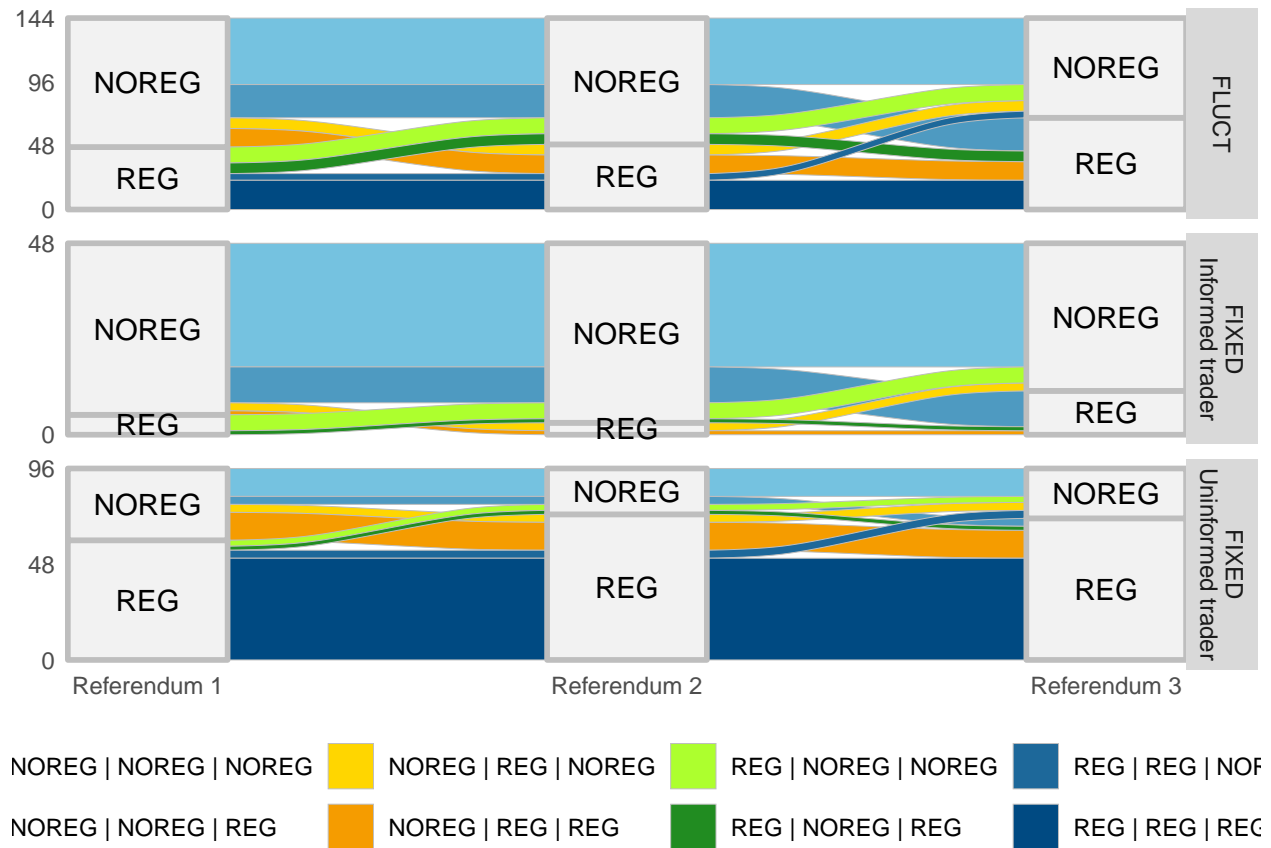


Table 14: [Table OA4:] Multinomial logit regressions of voting migration by treatment and trader type.

	Model 1
NOREG REG: (Intercept)	-1.55** (0.53)
NOREG REG: ExpectedRoleInformed trader	-1.38 (2.57)
NOREG REG: ExpectedRoleUninformed trader	1.38 (0.89)
NOREG REG: AvgPDbefore1	-1.69 (5.07)
NOREG REG: regime_orderRN	-0.57 (0.52)
NOREG REG: xScoreAll	-0.52 (0.37)
NOREG REG: yScoreAll	0.35 (0.29)
NOREG REG: EETMonoNon-monotonic	2.54 (1.32)
NOREG REG: xScoreAll:yScoreAll	0.30 (0.18)
NOREG REG: ExpectedRoleInformed trader:AvgPDbefore1	-23.83 (18.12)
NOREG REG: ExpectedRoleUninformed trader:AvgPDbefore1	17.64* (7.90)
NOREG REG: ExpectedRoleInformed trader:regime_orderRN	-11.12 (42.05)
NOREG REG: ExpectedRoleUninformed trader:regime_orderRN	2.17* (0.98)
NOREG REG: ExpectedRoleInformed trader:xScoreAll	-1.50 (1.71)
NOREG REG: ExpectedRoleUninformed trader:xScoreAll	0.62 (0.60)
NOREG REG: ExpectedRoleInformed trader:yScoreAll	-0.84 (2.48)
NOREG REG: ExpectedRoleUninformed trader:yScoreAll	-0.96 (0.53)
NOREG REG: ExpectedRoleInformed trader:EETMonoNon-monotonic	-1.00 (3.06)
NOREG REG: ExpectedRoleUninformed trader:EETMonoNon-monotonic	-1.50 (1.72)
NOREG REG: ExpectedRoleInformed trader:xScoreAll:yScoreAll	0.71 (1.43)
NOREG REG: ExpectedRoleUninformed trader:xScoreAll:yScoreAll	-0.48 (0.38)
REG NOREG: (Intercept)	-1.05* (0.48)
REG NOREG: ExpectedRoleInformed trader	-1.23 (1.31)
REG NOREG: ExpectedRoleUninformed trader	-0.84 (1.22)
REG NOREG: AvgPDbefore1	-7.30 (4.84)
REG NOREG: regime_orderRN	0.30 (0.56)
REG NOREG: xScoreAll	1.39* (0.66)
REG NOREG: yScoreAll	-0.86* (0.34)
REG NOREG: EETMonoNon-monotonic	0.86 (1.46)

NOREG|NOREG NOREG|REG REG|NOREG REG|REG 0.4617940 0.1493021 0.1041659 0.2847380

Figure 5: [Figure OA4:] Out-of-sample probability prediction for multinomial logit regression by treatment and trader type.

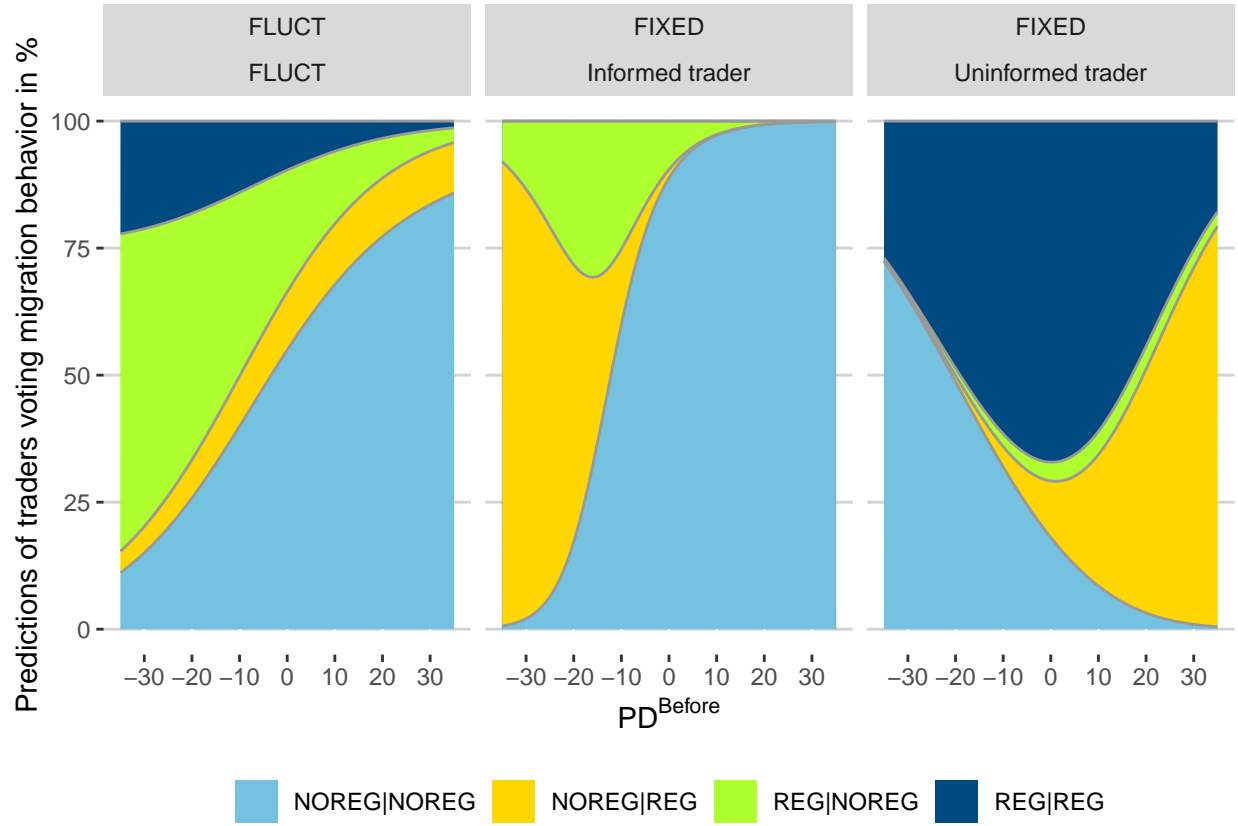
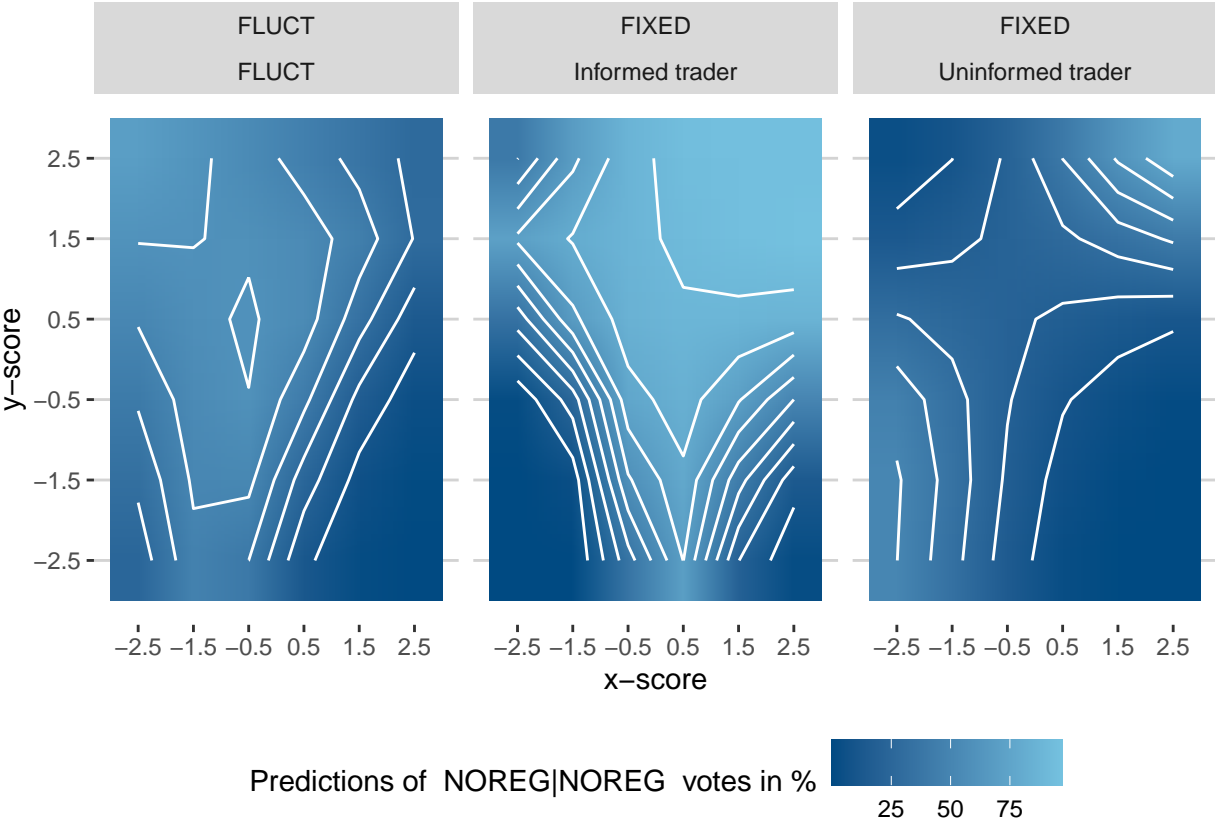




Figure 6: [Figure OA5:] Out-of-sample probability prediction for multinomial logit regression by treatment and trader type.



## Participation rates and trading activity

```
##      transactionVol VolumeInf VolumeUni LimitVol limitVolumeInf
## mean      93.65365  66.78385  85.84115  305.6016    108.06250
## sd       63.90228  48.32324  58.87867  185.8107     81.90539
## median   83.00000  57.00000  77.00000  287.0000     94.00000
## minimum   0.00000   0.00000   0.00000   66.0000      8.00000
## maximum  373.00000 289.00000 363.00000 2402.0000    1108.00000
## n        384.00000 384.00000 384.00000  384.0000    384.00000
##      limitVolumeUni ProfitPotential unprofittime      GD      GAD
## mean      197.5391      933.6578    14764.81  -0.01578313  0.1895170
## sd       170.4005     1352.2133    49974.75   0.20025296  0.2411925
## median   169.5000      442.4500     1065.90  -0.01582415  0.1089534
## minimum   14.0000       0.0000       0.00    -0.65181879  0.0000000
## maximum  2327.0000     9323.1900    530961.20  1.04748153  1.8974671
## n        384.0000      384.0000     384.00  384.00000000  384.0000000
##      RD      RAD NumActiveTrader
## mean   -0.004103459  0.1466382      8.3906250
## sd      0.192270548  0.1428157     0.9441399
## median  -0.013122424  0.1020724     9.0000000
## minimum -0.566050417  0.0000000     5.0000000
## maximum  1.048943015  1.0489430     9.0000000
## n       384.000000000 384.0000000     384.0000000
```

## Participation rates

Traders are active, if they either placed a limit order or accepted a market order.

Test participation difference between regulatory regimes in both treatments and all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: (LimitVolume > 0 | Volume > 0) by IsREG
## t = -0.2115, df = 3454, p-value = 0.8325
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
##  -0.01875818  0.01510521
## sample estimates:
## mean in group NOREG    mean in group REG
##      0.9315068          0.9333333
```

Test participation difference between regulatory regimes for informed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: (LimitVolume > 0 | Volume > 0) by IsREG
## t = 3.6105, df = 574, p-value = 0.0003323
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
##  0.03021191 0.10229596
## sample estimates:
## mean in group NOREG    mean in group REG
##      0.9820789          0.9158249
```

Test participation difference between regulatory regimes for uninformed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: (LimitVolume > 0 | Volume > 0) by IsREG
## t = 2.5337, df = 1150, p-value = 0.01142
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## 0.00781733 0.06147777
## sample estimates:
## mean in group NOREG mean in group REG
## 0.9605735 0.9259259
```

Test participation difference between regulatory regimes for informed traders in treatment FLUCT in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: (LimitVolume > 0 | Volume > 0) by IsREG
## t = -1.141, df = 574, p-value = 0.2543
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -0.037305631 0.009888603
## sample estimates:
## mean in group NOREG mean in group REG
## 0.9761905 0.9898990
```

Test participation difference between regulatory regimes for uninformed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: (LimitVolume > 0 | Volume > 0) by IsREG
## t = -3.1113, df = 1150, p-value = 0.001909
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -0.09823726 -0.02225336
## sample estimates:
## mean in group NOREG mean in group REG
## 0.8690476 0.9292929
```

### Limit order volume

Test limit order volume between regulatory regimes for uninformed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: LimitVolume by IsREG
## t = 0.0081282, df = 1150, p-value = 0.9935
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
```

```
## -5.012936 5.054643
## sample estimates:
## mean in group NOREG mean in group REG
## 34.73297 34.71212
```

Test limit order volume between regulatory regimes for uninformed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: LimitVolume by IsREG
## t = -1.1684, df = 1150, p-value = 0.2429
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -15.432275 3.912554
## sample estimates:
## mean in group NOREG mean in group REG
## 29.14418 34.90404
```

Test limit order volume between treatments for uninformed traders in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: LimitVolume by subTreatment
## t = 1.3478, df = 2302, p-value = 0.1779
## alternative hypothesis: true difference in means between group FIXED and group FLUCT is not equal to 0
## 95 percent confidence interval:
## -1.636954 8.833135
## sample estimates:
## mean in group FIXED mean in group FLUCT
## 34.72222 31.12413
```

Test limit order volume between regulatory regimes for informed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: LimitVolume by IsREG
## t = 4.9656, df = 574, p-value = 9.044e-07
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## 10.19901 23.54683
## sample estimates:
## mean in group NOREG mean in group REG
## 43.68100 26.80808
```

Test limit order volume between regulatory regimes for informed traders in treatment FLUCT in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: LimitVolume by IsREG
## t = 2.0263, df = 574, p-value = 0.0432
```

```
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
##    0.2875933 18.4603624
## sample estimates:
## mean in group NOREG    mean in group REG
##           40.28307           30.90909
```

Test limit order volume between treatments for informed traders in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: LimitVolume by subTreatment
## t = -0.74203, df = 1150, p-value = 0.4582
## alternative hypothesis: true difference in means between group FIXED and group FLUCT is not equal to 0
## 95 percent confidence interval:
##   -7.579275  3.419552
## sample estimates:
## mean in group FIXED mean in group FLUCT
##           34.98090           37.06076
```

Table 15: [Table OA6:] Mixed effects regressions of offered volume ( $\ln(\text{limit volume})$ ) by trader type and phase.

	Phases 1 and 2	Phase 3	Phase 4	Phases 1 and 2	Phase 3	Phase 4
(Intercept)	4.49*** (0.17)	4.75*** (0.21)	4.86*** (0.20)	5.02*** (0.18)	5.16*** (0.21)	4.98*** (0.21)
subTreatmentFIXED	-0.02 (0.15)	-0.17 (0.20)	0.28 (0.21)	0.21 (0.18)	0.18 (0.21)	0.19 (0.24)
regime_orderRN	-0.14 (0.15)	-0.20 (0.20)	-0.45* (0.19)	0.00 (0.18)	-0.03 (0.21)	0.05 (0.22)
IsREGREG	-0.37*** (0.08)	-0.21 (0.22)	-0.67** (0.22)	0.03 (0.06)	0.18 (0.24)	-0.14 (0.25)
BBVCent	-0.00 (0.00)	0.01* (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
abs(BBVCent)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.00)	-0.01 (0.01)	-0.00 (0.01)
Period0	0.06* (0.02)	0.02 (0.06)	-0.01 (0.05)	-0.01 (0.02)	-0.10* (0.05)	-0.07 (0.05)
AIC	409.57	202.94	188.32	305.74	191.81	192.32
BIC	438.88	226.02	211.40	335.05	214.89	215.40
Log Likelihood	-195.78	-92.47	-85.16	-143.87	-86.90	-87.16
Num. obs.	192	96	96	192	96	96
Num. groups: Group	32	32	32	32	32	32
Var: Group (Intercept)	0.13	0.22	0.22	0.24	0.28	0.31
Var: Residual	0.32	0.20	0.16	0.15	0.15	0.15

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

## Transaction volume

The number of transactions per second is equal to 0.1343895, while 0.520298 is the transacted volume per second over all sessions, periods, and markets.

Test transaction volume between regulatory regimes for informed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: Volume by IsREG
## t = 4.0085, df = 574, p-value = 6.916e-05
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## 5.145752 15.033025
## sample estimates:
## mean in group NOREG mean in group REG
## 32.86380 22.77441
```

Test transaction volume between regulatory regimes for informed traders in treatment FLUCT in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: Volume by IsREG
## t = 0.33382, df = 574, p-value = 0.7386
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -3.673955 5.178525
## sample estimates:
## mean in group NOREG mean in group REG
## 22.32804 21.57576
```

Test transaction volume between treatments for informed traders in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: Volume by subTreatment
## t = 3.3614, df = 1150, p-value = 0.0008011
## alternative hypothesis: true difference in means between group FIXED and group FLUCT is not equal to 0
## 95 percent confidence interval:
## 2.327956 8.856071
## sample estimates:
## mean in group FIXED mean in group FLUCT
## 27.66146 22.06944
```

Test transaction volume between regulatory regimes for uninformed traders in treatment FIXED in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: Volume by IsREG
## t = 2.0804, df = 1150, p-value = 0.03771
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## 0.1813483 6.1930408
## sample estimates:
## mean in group NOREG mean in group REG
## 24.56093 21.37374
```

Test transaction volume between regulatory regimes for uninformed traders in treatment FLUCT in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: Volume by IsREG
## t = -1.5741, df = 1150, p-value = 0.1157
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -4.3523822 0.4774423
## sample estimates:
## mean in group NOREG mean in group REG
## 13.98677 15.92424
```

Test transaction volume between treatments for uninformed traders in all phases reported in the Online Appendix in Section 3.1

```
##
## Two Sample t-test
##
## data: Volume by subTreatment
## t = 8.5698, df = 2302, p-value < 2.2e-16
## alternative hypothesis: true difference in means between group FIXED and group FLUCT is not equal to 0
## 95 percent confidence interval:
## 6.373571 10.155943
## sample estimates:
## mean in group FIXED mean in group FLUCT
## 22.91753 14.65278
```

Test transaction volume between regulatory regimes for the trader type correspondence between uninformed traders (uu) in Phases 1 & 2 reported in the Online Appendix in Section 3.1

```
##
## Paired t-test
##
## data: subset(marketsummary, Period > 0 & Period < 7 & IsREG == "REG")$Volume_Uninformed_Uninformed
## t = 1.3037, df = 95, p-value = 0.1955
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
## -2.341724 11.300057
## sample estimates:
## mean difference
## 4.479167
```

Test transaction volume between regulatory regimes for the trader type correspondence between informed and uninformed traders (iu) in Phases 1 & 2 reported in the Online Appendix in Section 3.1

```
##
## Paired t-test
##
## data: subset(marketsummary, Period > 0 & Period < 7 & IsREG == "REG")$Volume_Informed_Uninformed
## t = -1.7303, df = 95, p-value = 0.08683
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
## -12.2131783 0.8381783
## sample estimates:
```

```
## mean difference
##      -5.6875
```

Test transaction volume between regulatory regimes for the trader type correspondence between uninformed and informed traders (ui) in Phases 1 & 2 reported in the Online Appendix in Section 3.1

```
##
## Paired t-test
##
## data:  subset(marketsummary, Period > 0 & Period < 7 & IsREG == "REG")$Volume_Uninformed_Informed and
## t = -1.9364, df = 95, p-value = 0.0558
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  -11.7506936  0.1465269
## sample estimates:
## mean difference
##      -5.802083
```

Test transaction volume between regulatory regimes for the trader type correspondence between uninformed and informed traders (ui) in treatment FIXED in Phases 1 & 2 reported in the Online Appendix in Section 3.1

```
##
## Paired t-test
##
## data:  subset(marketsummary, Period > 0 & Period < 7 & subTreatment == "FIXED" & IsREG == "REG")$Vol
## t = -3.4081, df = 47, p-value = 0.001351
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  -21.601225  -5.565442
## sample estimates:
## mean difference
##      -13.58333
```

Test transaction volume between regulatory regimes for the trader type correspondence between informed and uninformed traders (iu) in Phases 1 & 2 reported in the Online Appendix in Section 3.1

```
##
## Paired t-test
##
## data:  subset(marketsummary, Period > 0 & Period < 7 & subTreatment == "FLUCT" & IsREG == "REG")$Vol
## t = -2.2705, df = 47, p-value = 0.02781
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  -16.4243367  -0.9923299
## sample estimates:
## mean difference
##      -8.708333
```



Figure 7: [Figure OA6:] Mean market trading volume by combination of trading partners, regulatory regime, and phase.

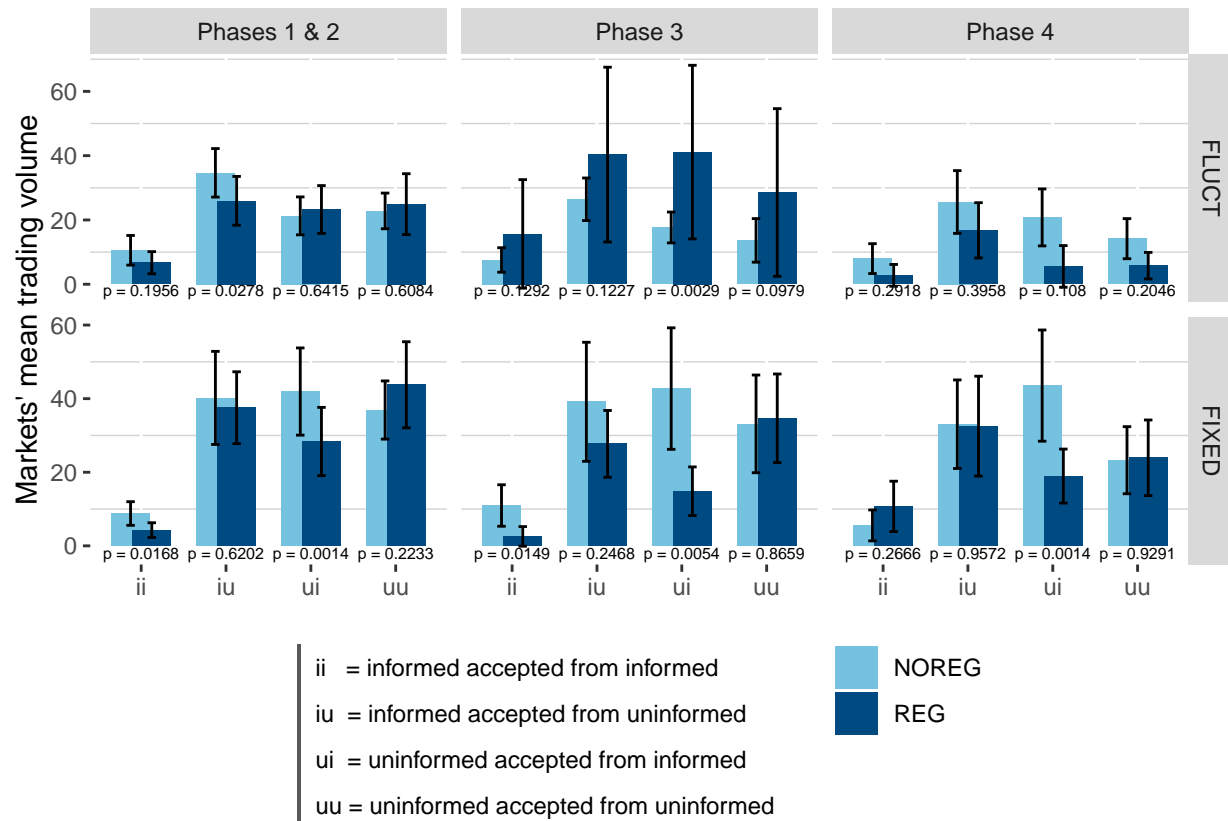


Table 16: [Table OA7:] Mixed effects regressions of trading volume ('ln(transaction volume)') by trader type and phase.

	Phases 1 and 2	Phase 3	Phase 4	Phases 1 and 2	Phase 3	Phase 4
(Intercept)	3.76*** (0.21)	3.46*** (0.30)	3.30*** (0.37)	4.20*** (0.20)	3.68*** (0.30)	3.34*** (0.36)
subTreatmentFIXED	0.35 (0.21)	0.43 (0.28)	0.84* (0.35)	0.48* (0.21)	0.64* (0.29)	1.07** (0.36)
regime_orderRN	-0.04 (0.21)	-0.21 (0.27)	-0.17 (0.32)	0.04 (0.21)	-0.18 (0.28)	-0.10 (0.33)
IsREGREG	-0.32*** (0.07)	-0.27 (0.31)	-0.57 (0.37)	-0.15* (0.06)	-0.09 (0.32)	-0.42 (0.38)
BBVCent	0.00 (0.00)	0.01 (0.01)	0.01 (0.01)	0.00 (0.00)	0.00 (0.01)	-0.00 (0.01)
abs(BBVCent)	0.02*** (0.00)	0.02* (0.01)	0.02 (0.01)	0.00 (0.00)	0.02 (0.01)	0.02 (0.01)
Period0	0.01 (0.02)	0.11 (0.09)	-0.08 (0.11)	-0.04* (0.02)	0.03 (0.08)	-0.09 (0.11)
AIC	380.59	268.58	300.97	327.21	266.01	301.44
BIC	409.90	291.66	323.86	356.53	289.09	324.33
Log Likelihood	-181.29	-125.29	-141.48	-154.60	-124.01	-141.72
Num. obs.	192	96	94	192	96	94
Num. groups: Group	32	32	32	32	32	32
Var: Group (Intercept)	0.31	0.39	0.56	0.32	0.47	0.60
Var: Residual	0.23	0.43	0.67	0.17	0.39	0.66

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

Participation rates, transacted volume, and limit order volume by regulatory regime, trader type, and phase (Table OA5)

##	NOREG	REG	pvalues_Informed	NOREG
## PR all phases FIXED	"98.2079"	"91.5825"	"0.0003"	"96.0573"
## PR Phases 1 & 2 FIXED	"98.6111"	"93.0556"	"0.0204"	"94.4444"
## PR Phase 3 FIXED	"96.2963"	"90.4762"	"0.1545"	"98.1481"
## PR Phase 4 FIXED	"100"	" 90"	"0.0162"	"97.2222"
## PR Phase 3 & 4 FIXED	"97.7778"	"90.1961"	"0.0079"	"97.7778"
## PR all phases FLUCT	"97.6190"	"98.9899"	"0.2543"	"86.9048"
## PR Phases 1 & 2 FLUCT	"99.3056"	"98.6111"	"0.319"	"91.3194"
## PR Phase 3 FLUCT	" 97.4359"	"100.0000"	"0.404"	"88.4615"
## PR Phase 4 FLUCT	" 95.7265"	"100.0000"	"0.2775"	"79.9145"
## PR Phase 3 & 4 FLUCT	" 96.5812"	"100.0000"	"0.1694"	"84.1880"
## Vol all phases FIXED	"32.8638"	"22.7744"	"0.0001"	"24.5609"
## Vol Phases 1 & 2 FIXED	"33.2431"	"24.8125"	"0.0007"	"25.9965"
## Vol Phase 3 FIXED	"34.6049"	"15.9048"	"0.0003"	"24.6975"
## Vol Phase 4 FIXED	"29.2407"	"24.3222"	"0.3208"	"20.5278"
## Vol Phase 3 & 4 FIXED	"32.4593"	"20.8562"	"0.0009"	"23.0296"
## Vol all phases FLUCT	"22.3280"	"21.5758"	"0.7386"	"13.9868"
## Vol Phases 1 & 2 FLUCT	"25.6875"	"20.8750"	"0.0157"	"16.9271"
## Vol Phase 3 FLUCT	"19.7436"	"37.5926"	"0.0016"	"11.8974"
## Vol Phase 4 FLUCT	"20.7778"	" 9.2963"	"0.0374"	"12.4573"
## Vol Phase 3 & 4 FLUCT	"20.2607"	"23.4444"	"0.4259"	"12.1774"
## LimitVol all phases FIXED	"43.6810"	"26.8081"	"0"	"34.7330"
## LimitVol Phases 1 & 2 FIXED	"38.7986"	"28.0694"	"0.0023"	"36.1979"
## LimitVol Phase 3 FIXED	"41.5679"	"25.0000"	"0.0148"	"34.4074"

## LimitVol Phase 4 FIXED	"59.8704"	"26.0556"	"0"	"31.3148"
## LimitVol Phase 3 & 4 FIXED	"48.8889"	"25.6209"	"0"	"33.1704"
## LimitVol all phases FLUCT	"40.2831"	"30.9091"	"0.0432"	"29.1442"
## LimitVol Phases 1 & 2 FLUCT	"36.0278"	"28.8611"	"0.0059"	"28.3160"
## LimitVol Phase 3 FLUCT	"46.4274"	"49.8148"	"0.863"	"31.3120"
## LimitVol Phase 4 FLUCT	"39.3761"	"22.9259"	"0.0143"	"27.9957"
## LimitVol Phase 3 & 4 FLUCT	"42.9017"	"36.3704"	"0.5289"	"29.6538"
##	REG	pvalues_Uninformed		
## PR all phases FIXED	"92.5926"	"0.0114"		
## PR Phases 1 & 2 FIXED	"97.9167"	"0.0073"		
## PR Phase 3 FIXED	"88.8889"	"0.0009"		
## PR Phase 4 FIXED	"86.6667"	"0.0028"		
## PR Phase 3 & 4 FIXED	"87.5817"	"0"		
## PR all phases FLUCT	"92.9293"	"0.0019"		
## PR Phases 1 & 2 FLUCT	"93.0556"	"0.3182"		
## PR Phase 3 FLUCT	"98.1481"	"0.0304"		
## PR Phase 4 FLUCT	"87.0370"	"0.2282"		
## PR Phase 3 & 4 FLUCT	"92.5926"	"0.0242"		
## Vol all phases FIXED	"21.3737"	"0.0377"		
## Vol Phases 1 & 2 FIXED	"25.5729"	"0.8095"		
## Vol Phase 3 FIXED	"18.6508"	"0.037"		
## Vol Phase 4 FIXED	"16.5611"	"0.1275"		
## Vol Phase 3 & 4 FIXED	"17.4216"	"0.0035"		
## Vol all phases FLUCT	"15.9242"	"0.1157"		
## Vol Phases 1 & 2 FLUCT	"16.5069"	"0.7269"		
## Vol Phase 3 FLUCT	"23.0926"	"0.0001"		
## Vol Phase 4 FLUCT	" 5.6481"	"0.005"		
## Vol Phase 3 & 4 FLUCT	"14.3704"	"0.2468"		
## LimitVol all phases FIXED	"34.7121"	"0.9935"		
## LimitVol Phases 1 & 2 FIXED	"35.9861"	"0.9326"		
## LimitVol Phase 3 FIXED	"37.0238"	"0.6088"		
## LimitVol Phase 4 FIXED	"31.0556"	"0.9551"		
## LimitVol Phase 3 & 4 FIXED	"33.5131"	"0.9193"		
## LimitVol all phases FLUCT	"34.9040"	"0.2429"		
## LimitVol Phases 1 & 2 FLUCT	"38.1493"	"0.2195"		
## LimitVol Phase 3 FLUCT	"31.9259"	"0.9543"		
## LimitVol Phase 4 FLUCT	"20.5741"	"0.132"		
## LimitVol Phase 3 & 4 FLUCT	"26.2500"	"0.5631"		

### Short selling activity

##	NOREG	REG	pvalues_Informed	NOREG	REG
## Short sells all phases	"0.8645"	"0.5859"	"0.2216"	"0.8645"	"0.5859"
## Short sells Phases 1 & 2	"0.9757"	"0.7396"	"0.4876"	"0.9757"	"0.7396"
## Short sells Phase 3	"0.4596"	"0.7444"	"0.4323"	"0.4596"	"0.7444"
## Short sells Phase 4	"1.1462"	"0.0855"	"0.0164"	"1.1462"	"0.0855"
##	pvalues_Uninformed				
## Short sells all phases	"0.2216"				
## Short sells Phases 1 & 2	"0.4876"				
## Short sells Phase 3	"0.4323"				
## Short sells Phase 4	"0.0164"				

Table 17: [Table OA8:] Zero-inflated negative binomial model of short sells by trader type and phase

	Phases 1 and 2	Phase 3	Phase 4	Phases 1 and 2	Phase 3	Phase 4
Count model: (Intercept)	3.76*** (0.46)	2.50*** (0.60)	3.22*** (0.77)	2.68*** (0.76)	1.30 (0.74)	4.94 (5.34)
Count model: subTreatmentFIXED	-0.47 (0.34)	-0.76* (0.36)	0.63 (0.44)	0.32 (0.32)	1.53* (0.67)	0.21 (0.99)
Count model: regime_orderRN	0.54 (0.37)	0.13 (0.26)	-0.60 (0.67)	0.06 (0.33)	-0.37 (0.63)	0.21 (1.42)
Count model: IsREGREG	-0.03 (0.29)	0.26 (0.43)	-1.46* (0.57)	-0.15 (0.33)	-0.14 (0.22)	1.27 (1.62)
Count model: BBVCent	0.00 (0.01)	0.00 (0.01)	0.01 (0.01)	-0.02 (0.02)	-0.01 (0.01)	0.03 (0.05)
Count model: abs(BBVCent)	-0.08** (0.03)	-0.01 (0.03)	-0.02 (0.02)	0.00 (0.03)	0.03 (0.07)	-0.17 (0.35)
Count model: Period0	-0.06 (0.06)	0.15 (0.29)	0.03 (0.21)	-0.05 (0.14)	-0.23 (0.43)	-1.62 (2.71)
Count model: Log(theta)	-0.02	1.48	1.16	-0.04	0.68	-0.81
Zero model: (Intercept)	2.74*** (0.80)	3.06** (0.99)	2.84* (1.14)	1.59* (0.64)	1.71 (0.95)	2.38 (2.68)
Zero model: subTreatmentFIXED	-1.06 (0.67)	-0.53 (0.74)	-0.00 (0.84)	-0.26 (0.57)	-0.40 (0.88)	-2.46 (2.63)
Zero model: regime_orderRN	0.45 (0.54)	0.55 (0.83)	0.36 (0.93)	-0.65 (0.56)	0.16 (0.79)	0.67 (2.84)
Zero model: IsREGREG	0.15 (0.48)	0.19 (1.10)	1.19 (1.01)	-0.04 (0.31)	-0.58 (0.86)	1.95 (2.76)
Zero model: BBVCent	0.06** (0.02)	0.03 (0.02)	0.00 (0.02)	-0.05*** (0.01)	-0.04* (0.02)	-0.06 (0.04)
Zero model: abs(BBVCent)	-0.09* (0.04)	-0.10** (0.03)	-0.13** (0.04)	0.01 (0.03)	-0.01 (0.04)	-0.05 (0.30)
Zero model: Period0	0.08 (0.16)	0.07 (0.41)	0.52 (0.35)	0.03 (0.07)	0.01 (0.30)	-0.31 (2.19)
Hurdle test p-value	0.00	1.00	0.00	1.00	0.00	1.00
$sum_i \hat{f}_i(0)$	152	81	82	150	74	80
$mu_i$	2.60	0.55	1.38	2.46	0.56	11.86
$mu_i(BBV12.5)$	1.33	1.19	4.28	2.84	1.20	6.54
$mu_i(BBV - 12.5)$	4.75	2.08	3.84	1.72	0.66	0.84
AIC	459.73	193.69	185.59	513.34	261.85	201.85
Log Likelihood	-214.87	-81.85	-77.79	-241.67	-115.93	-85.92
Num. obs.	192	96	96	192	96	96

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .**Margin buying activity**

##	NOREG	REG	pvalues_Informed	NOREG	REG
## Margin buys all phases	"1.0792"	"0.7300"	"0.1008"	"1.0792"	"0.7300"
## Margin buys Phases 1 & 2	"1.2444"	"0.8438"	"0.1796"	"1.2444"	"0.8438"
## Margin buys Phase 3	"0.9740"	"0.6191"	"0.359"	"0.9740"	"0.6191"
## Margin buys Phase 4	"0.9229"	"0.5350"	"0.3645"	"0.9229"	"0.5350"
##	pvalues_Uninformed				
## Margin buys all phases	"0.1008"				
## Margin buys Phases 1 & 2	"0.1796"				
## Margin buys Phase 3	"0.359"				

## Margin buys Phase 4 "0.3645"

Table 18: [Table OA9:] Zero-inflated negative binomial model of margin buys evaluated at bbv by trader type and phase

	Phases 1 and 2	Phase 3	Phase 4	Phases 1 and 2	Phase 3	Phase 4
Count model: (Intercept)	2.41*** (0.41)	1.40** (0.51)	2.07* (0.83)	2.54*** (0.42)	1.04* (0.49)	1.56*** (0.32)
Count model: subTreatmentFIXED	0.08 (0.27)	0.24 (0.22)	0.20 (0.36)	0.41* (0.21)	-0.26 (0.45)	0.75*** (0.22)
Count model: regime_orderRN	-0.30 (0.28)	0.16 (0.23)	-0.07 (0.61)	0.34 (0.24)	-0.80 (0.57)	-0.72* (0.32)
Count model: IsREGREG	-0.20 (0.19)	-0.58*** (0.16)	-0.11 (0.80)	-0.24 (0.20)	-1.10** (0.40)	-0.44* (0.19)
Count model: BBVCent	0.00 (0.01)	0.03 (0.02)	-0.01 (0.02)	-0.01 (0.01)	0.01 (0.03)	0.03*** (0.01)
Count model: abs(BBVCent)	0.00 (0.01)	0.00 (0.02)	0.01 (0.04)	-0.02 (0.02)	0.15** (0.05)	0.06*** (0.01)
Count model: Period0	0.02 (0.07)	0.22 (0.21)	0.17 (0.39)	-0.09 (0.07)	-0.36 (0.37)	0.07 (0.10)
Count model: Log(theta)	0.56	1.57	0.44	0.43	0.93	21.01
Zero model: (Intercept)	0.45 (0.48)	1.33 (0.77)	1.35 (0.98)	0.56 (0.67)	0.51 (1.03)	1.94* (0.90)
Zero model: subTreatmentFIXED	0.39 (0.42)	0.02 (0.56)	-1.19* (0.57)	-0.20 (0.47)	-0.44 (0.54)	-0.05 (0.71)
Zero model: regime_orderRN	-0.29 (0.46)	0.01 (0.49)	1.05 (0.68)	0.21 (0.44)	0.62 (0.69)	0.34 (0.79)
Zero model: IsREGREG	0.63* (0.31)	-0.11 (0.61)	1.73 (0.98)	0.35 (0.38)	-1.54 (1.09)	-0.08 (1.03)
Zero model: BBVCent	-0.06** (0.02)	-0.08* (0.03)	-0.06 (0.03)	0.06*** (0.02)	0.06** (0.02)	0.07* (0.03)
Zero model: abs(BBVCent)	0.02 (0.03)	0.01 (0.05)	-0.00 (0.05)	-0.00 (0.03)	0.07 (0.06)	-0.01 (0.04)
Zero model: Period0	-0.08 (0.11)	-0.12 (0.36)	-0.33 (0.44)	0.16 (0.12)	-0.02 (0.45)	-0.05 (0.32)
Hurdle test p-value	0.00	1.00	0.00	0.99	1.00	1.00
$sum_i \hat{f}_i(0)$	132	67	76	139	72	78
$\mu_i$	4.36	0.85	1.64	4.59	1.06	0.59
$\mu_i(BBV12.5)$	5.91	2.53	2.96	2.11	2.38	1.10
$\mu_i(BBV - 12.5)$	2.29	0.23	1.05	6.22	5.88	1.98
AIC	633.85	294.78	243.42	590.17	241.12	200.43
Log Likelihood	-301.92	-132.39	-106.71	-280.08	-105.56	-85.21
Num. obs.	192	96	96	192	96	96

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

Table 19: [Table OA10:] Zero-inflated negative binomial model of margin buys evaluated at the corresponding market price by trader type and phases

	Phases 1 and 2	Phase 3	Phase 4	Phases 1 and 2	Phase 3	Phase 4
Count model: (Intercept)	2.37*** (0.39)	1.43** (0.48)	1.99* (0.88)	2.60*** (0.40)	0.88 (0.47)	0.18 (1.26)
Count model: subTreatmentFIXED	-0.01 (0.26)	0.30 (0.21)	0.16 (0.45)	0.44* (0.21)	-0.07 (0.42)	0.75 (0.84)
Count model: regime_orderRN	-0.16 (0.27)	0.17 (0.23)	0.05 (0.70)	0.29 (0.25)	-0.59 (0.53)	-1.04 (0.79)
Count model: IsREGREG	-0.15 (0.17)	-0.62*** (0.16)	-0.26 (0.89)	-0.27 (0.21)	-1.01** (0.38)	-0.02 (0.78)
Count model: BBVCent	0.01* (0.01)	0.04* (0.02)	-0.00 (0.02)	0.00 (0.01)	0.02 (0.03)	0.05* (0.02)
Count model: abs(BBVCent)	-0.00 (0.01)	-0.01 (0.02)	0.01 (0.04)	-0.02 (0.02)	0.16** (0.05)	0.09 (0.05)
Count model: Period0	0.02 (0.06)	0.24 (0.21)	0.21 (0.41)	-0.09 (0.07)	-0.42 (0.38)	0.21 (0.30)
Count model: Log(theta)	0.63	1.54	0.33	0.36	1.07	-1.50
Zero model: (Intercept)	0.45 (0.48)	1.34 (0.77)	1.32 (0.99)	0.55 (0.69)	0.54 (0.98)	-73.83*** (7.40)
Zero model: subTreatmentFIXED	0.38 (0.42)	0.03 (0.56)	-1.19* (0.58)	-0.18 (0.47)	-0.36 (0.54)	31.41*** (5.69)
Zero model: regime_orderRN	-0.27 (0.46)	0.01 (0.49)	1.06 (0.69)	0.21 (0.45)	0.69 (0.70)	-44.80*** (4.77)
Zero model: IsREGREG	0.64* (0.31)	-0.11 (0.61)	1.72 (0.98)	0.36 (0.38)	-1.43 (1.00)	45.35*** (2.18)
Zero model: BBVCent	-0.05** (0.02)	-0.08* (0.03)	-0.06 (0.03)	0.06*** (0.02)	0.06** (0.02)	11.98*** (0.62)
Zero model: abs(BBVCent)	0.02 (0.03)	0.00 (0.05)	-0.00 (0.05)	-0.00 (0.03)	0.06 (0.06)	-8.90*** (0.41)
Zero model: Period0	-0.08 (0.11)	-0.12 (0.36)	-0.32 (0.45)	0.16 (0.12)	-0.04 (0.44)	84.68*** (7.35)
Hurdle test p-value	0.00	1.00	0.00	1.00	1.00	1.00
$sum_i \hat{f}_i(0)$	132	67	76	139	73	76
$\mu_i$	4.15	0.87	1.53	4.93	0.89	1.20
$\mu_i(BBV12.5)$	6.14	2.60	2.98	2.49	2.42	6.15
$\mu_i(BBV - 12.5)$	1.76	0.19	0.95	5.64	4.73	1.98
AIC	633.62	298.05	244.14	579.64	239.04	210.30
Log Likelihood	-301.81	-134.02	-107.07	-274.82	-104.52	-90.15
Num. obs.	192	96	96	192	96	96

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

## Market quality

### Deviations

$$\begin{aligned}
RD &= \frac{\sum Volume_i (Price_i - BBV)}{BBV \sum Volume_i} = \frac{\sum Volume_i Price_i}{BBV \sum Volume_i} - 1 \\
RAD &= \frac{\sum Volume_i |Price_i - BBV|}{BBV \sum Volume_i} \\
GD_{Market} &= \exp \left( \frac{1}{Vol} \sum_{j=1}^{\#TRA_m} \ln \left( \frac{P_j}{BBV} \right) \cdot Vol_j \right) - 1 \\
GAD_{Market} &= \exp \left( \frac{1}{Vol} \sum_{j=1}^{\#TRA_m} \left| \ln \left( \frac{P_j}{BBV} \right) \right| \cdot Vol_j \right) - 1
\end{aligned} \tag{1}$$

Table 20: [Table OA11:] Mixed effects regressions of measures for the informational efficiency of prices (‘GD’, ‘GAD’) by phase.

	Phases 1 and 2	Phase 3	Phase 4	Phases 1 and 2	Phase 3	Phase 4
(Intercept)	−10.35*	−2.35	1.54	14.74*	3.74	−2.89
	(4.16)	(3.65)	(4.44)	(6.58)	(4.65)	(5.34)
subTreatmentFIXED	−5.63	−2.29	−4.96	11.10*	6.51	5.12
	(3.47)	(3.03)	(4.25)	(5.00)	(3.91)	(5.65)
regime_orderRN	−7.38*	−3.43	−5.91	0.90	3.48	2.96
	(3.47)	(2.95)	(3.87)	(4.99)	(3.80)	(5.15)
IsREGREG	1.13	−2.25	1.03	1.35	−2.73	7.60
	(2.15)	(3.35)	(4.52)	(3.75)	(4.32)	(5.95)
BBVCent	−0.99***	−0.55***	−0.71***	0.08	−0.14	−0.16
	(0.07)	(0.07)	(0.09)	(0.12)	(0.09)	(0.09)
abs(BBVCent)	0.56***	0.40**	0.16	0.88***	0.27	0.74***
	(0.14)	(0.14)	(0.16)	(0.25)	(0.18)	(0.17)
Period0	2.20***	0.14	2.04	−3.80***	1.48	0.62
	(0.62)	(1.24)	(1.41)	(1.08)	(1.56)	(1.42)
AIC	1608.41	729.13	762.25	1802.68	771.34	778.81
BIC	1637.73	752.21	785.33	1831.99	794.42	801.89
Log Likelihood	−795.20	−355.57	−372.13	−892.34	−376.67	−380.40
Num. obs.	192	96	96	192	96	96
Num. groups: Group	32	32	32	32	32	32
Var: Group (Intercept)	59.36	33.52	74.25	87.98	58.33	161.78
Var: Residual	215.50	91.21	120.18	653.83	144.24	121.53

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

$$Efficiency = \frac{GAD^U - GAD^A}{GAD^U} \tag{2}$$

##

## Two Sample t-test

##

## data: dGAD by IsREG

## t = 2.3934, df = 189, p-value = 0.01767

## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0

## 95 percent confidence interval:

```

## 0.01938633 0.20114074
## sample estimates:
## mean in group NOREG    mean in group REG
##      0.12477751      0.01451397

##      NOREG      REG      pvalues_GADA NOREG      REG
## all phases  " 0.2350" " 0.2245" " 0.7958"    " 0.0664" " 0.2483"
## Phases 1 & 2 " 0.3081" " 0.2723" " 0.6066"   "-0.2845" " 0.2006"
## Phase 3     " 0.1699" " 0.1318" " 0.4220"    " 0.2290" " 0.6912"
## Phase 4     " 0.1377" " 0.2130" " 0.2328"    " 0.6498" " 0.0532"
##      pvalues_Efficiency
## all phases  " 0.4243"
## Phases 1 & 2 " 0.2545"
## Phase 3     " 0.0249"
## Phase 4     " 0.0124"

##      NOREG      REG      pvalues_GADA NOREG      REG
## all phases  "0.12241" "0.20100" "0.00578"    "0.58862" "0.40063"
## Phases 1 & 2 "0.15852" "0.22962" "0.11886"    "0.53054" "0.32633"
## Phase 3     "0.09163" "0.14112" "0.27734"    "0.64150" "0.60783"
## Phase 4     "0.10875" "0.10821" "0.99201"    "0.61255" "0.59758"
##      pvalues_Efficiency
## all phases  "0.02097"
## Phases 1 & 2 "0.08281"
## Phase 3     "0.84350"
## Phase 4     "0.93499"

##
## Two Sample t-test
##
## data: dGAD by IsREG
## t = 2.3934, df = 189, p-value = 0.01767
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## 0.01938633 0.20114074
## sample estimates:
## mean in group NOREG    mean in group REG
##      0.12477751      0.01451397

##      NOREG      REG      pvalues_GADA NOREG      REG
## all phases  "0.13887" "0.21369" "0.04186"    "0.50244" "0.38609"
## Phases 1 & 2 "0.18504" "0.28266" "0.12148"    "0.33042" "0.31969"
## Phase 3     "0.10319" "0.10460" "0.96708"    "0.52738" "0.80478"
## Phase 4     "0.07187" "0.18200" "0.09175"    "0.84601" "0.23230"
##      pvalues_Efficiency
## all phases  "0.28076"
## Phases 1 & 2 "0.94551"
## Phase 3     "0.11034"
## Phase 4     "0.00595"

##      NOREG      REG      pvalues_GADA NOREG      REG
## all phases  "0.09380" "0.17830" "0.00276"    "0.67945" "0.47660"
## Phases 1 & 2 "0.13259" "0.20248" "0.12617"    "0.63123" "0.41947"
## Phase 3     "0.06810" "0.11225" "0.31674"    "0.70170" "0.68529"
## Phase 4     "0.06851" "0.09745" "0.51631"    "0.72909" "0.59268"
##      pvalues_Efficiency

```



```
## all phases      "0.01854"
## Phases 1 & 2    "0.07096"
## Phase 3         "0.93643"
## Phase 4         "0.50809"
```

### Bid-Ask spread

$$BAspread = BestAsk - BestBid \quad (3)$$

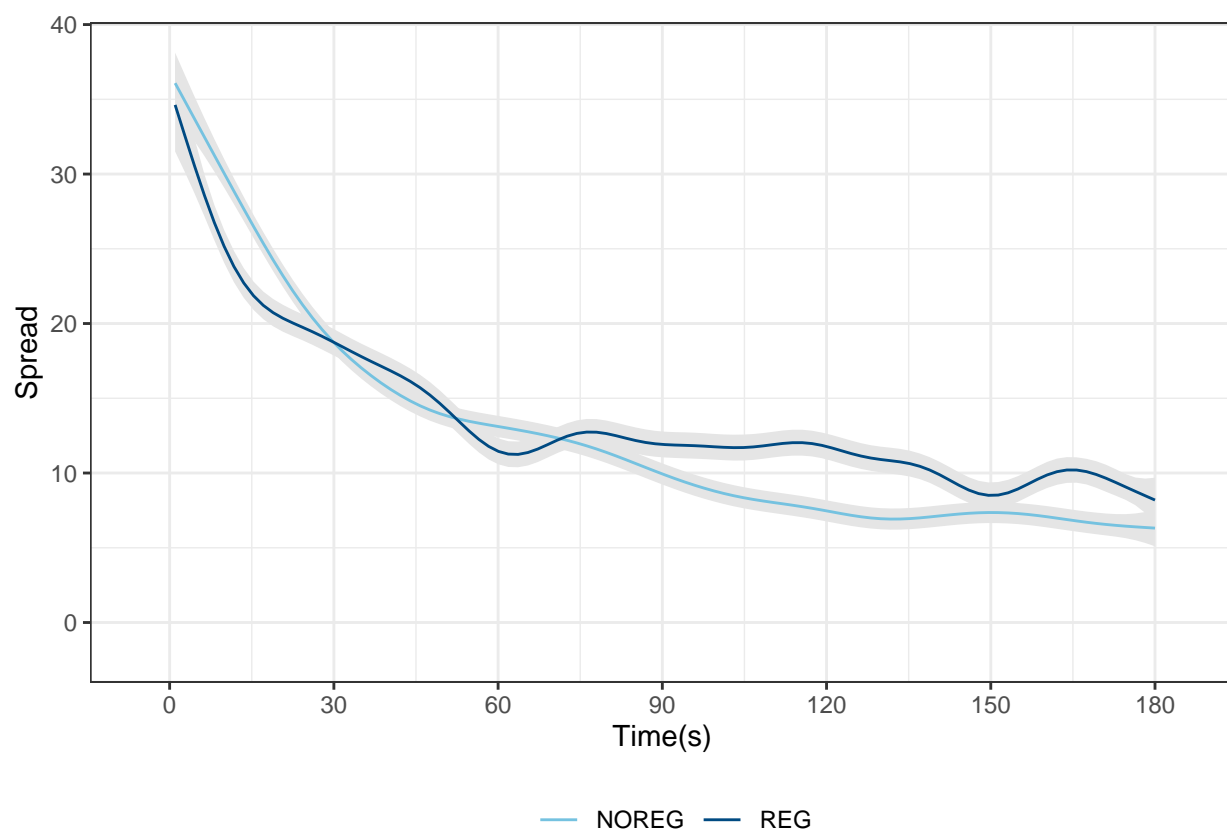
The Bid-Ask spread is analysed via the per second observation of the Bid and Ask prices.

Table 21: [Table OA12:] Mixed effect regressions of ‘Spread’ and ‘Volatility’ by phase.

	Phases 1 and 2	Phase 3	Phase 4	Phases 1 and 2	Phase 3	Phase 4
(Intercept)	13.82*** (2.19)	10.62*** (1.85)	7.37*** (1.57)	0.27*** (0.05)	0.04 (0.05)	0.07 (0.04)
subTreatmentFIXED	1.20 (2.02)	-0.57 (1.65)	0.23 (1.70)	0.08* (0.04)	0.08* (0.04)	0.03 (0.03)
regime_orderRN	2.08 (2.02)	-0.06 (1.61)	0.29 (1.55)	0.01 (0.04)	0.03 (0.03)	-0.01 (0.03)
IsREGREG	0.20 (0.98)	0.19 (1.83)	0.54 (1.78)	-0.03 (0.03)	-0.08* (0.04)	-0.02 (0.03)
BBVCent	0.14*** (0.03)	0.00 (0.03)	0.02 (0.02)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
abs(BBVCent)	0.11 (0.07)	0.03 (0.07)	0.04 (0.05)	-0.00 (0.00)	0.00 (0.00)	0.00* (0.00)
Period0	-1.08*** (0.28)	0.09 (0.57)	-0.44 (0.39)	-0.04*** (0.01)	0.02 (0.02)	-0.00 (0.01)
AIC	1331.56	600.06	554.79	-1.66	-27.76	-91.36
BIC	1360.88	623.14	577.87	27.66	-4.87	-69.07
Log Likelihood	-656.78	-291.03	-268.40	9.83	22.88	54.68
Num. obs.	192	96	96	192	94	88
Num. groups: Group	32	32	32	32	32	32
Var: Group (Intercept)	25.14	12.80	15.15	0.01	0.00	0.00
Var: Residual	44.62	19.14	9.32	0.04	0.02	0.01

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

Figure 8: BA-spread over time



## Trader profits

##	Informed.trader	Informed.trader.REG	Informed.trader.NOREG
## mean	31.92104	30.844737	32.38919
## sd	10.63102	7.673117	11.73795
## median	30.60413	30.247253	30.82569
## minimum	0.00000	0.000000	0.00000
## maximum	250.32345	87.685756	250.32345
## n	1392.00000	495.000000	657.00000
##	Uninformed.trader	Uninformed.trader.REG	Uninformed.trader.NOREG
## mean	29.168702	29.374632	29.099665
## sd	7.594293	6.682072	7.100828
## median	29.976393	30.000000	29.957984
## minimum	0.000000	0.000000	0.000000
## maximum	141.042119	83.068838	141.042119
## n	2640.000000	990.000000	1314.000000

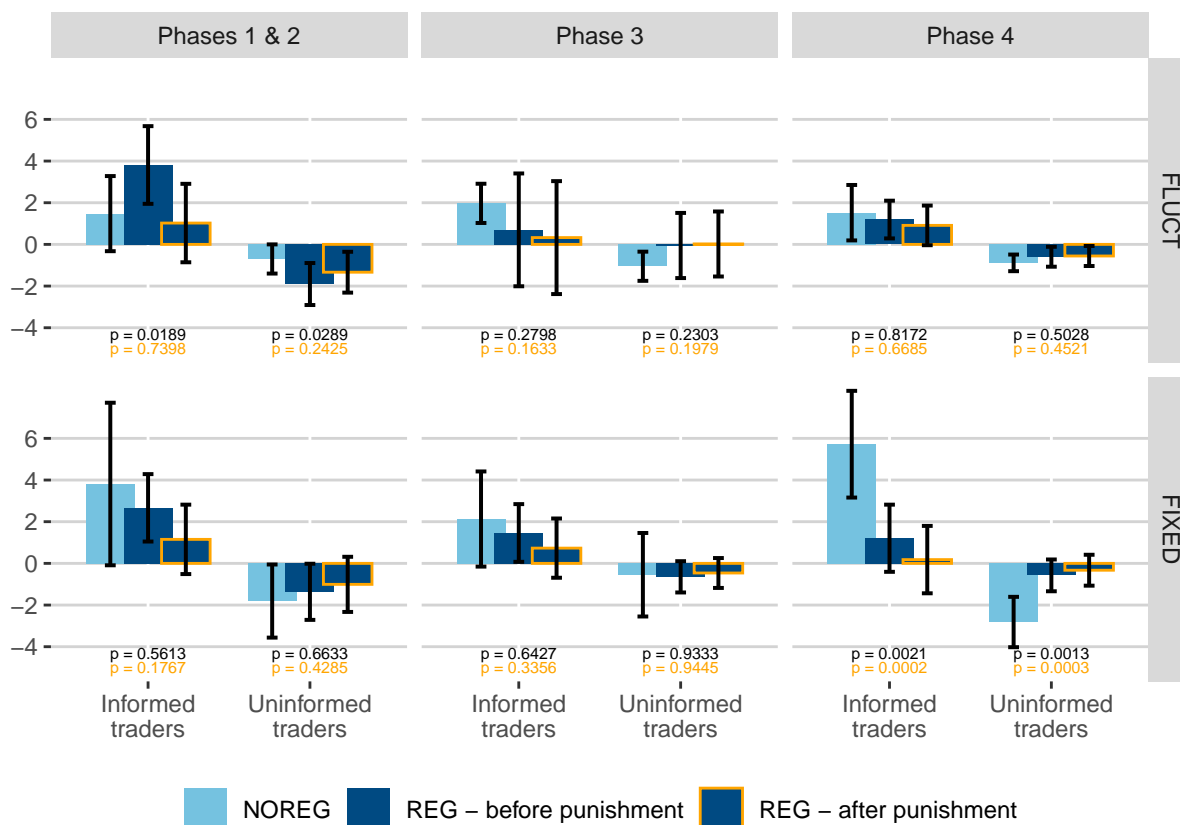
## Gross trading profits

$$(\sum Vol_j)\pi^{Before} = \frac{\sum_j \theta_j \cdot (P_j - BBV) \cdot Vol_j}{W_{t=0}}, \quad (4)$$

$$(\sum Vol_j)\pi^{After redistribution} = \pi^{Before} + \frac{Redist}{W_{t=0}}, \quad (5)$$

$$(\sum Vol_j)\pi^{After punishment} = \pi^{After redistribution} - \frac{Pen}{W_{t=0}}, \quad (6)$$

Figure 9: [Figure OA7:] Mean gross trading profits per trader by treatment, regulatory regime, trader type, and phase.



Test trader profits before redistribution between regulatory regimes for informed traders in both treatments and in all phases reported in the Online Appendix in Section 3.3

```
##
## Two Sample t-test
##
## data: PDbefore by IsREG
## t = 0.17014, df = 1150, p-value = 0.8649
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -0.01265817 0.01506194
## sample estimates:
## mean in group NOREG mean in group REG
## 0.02512583 0.02392394
```

Test trader profits after redistribution and penalty payments between regulatory regimes for informed traders in both treatments and in all phases reported in the Online Appendix in Section 3.3

```
##
## Two Sample t-test
##
## data: PDPun by IsREG
## t = 2.3804, df = 1150, p-value = 0.01745
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
```

```
## 95 percent confidence interval:
## 0.002963128 0.030752964
## sample estimates:
## mean in group NOREG    mean in group REG
##      0.025125828      0.008267782
```

Test trader profits after redistribution and penalty payments between trader types in NOREG in both treatments and in all phases reported in the Online Appendix in Section 3.3

```
##
## Two Sample t-test
##
## data: PDPun by Role
## t = 7.0573, df = 1969, p-value = 2.343e-12
## alternative hypothesis: true difference in means between group Informed trader and group Uninformed trader
## 95 percent confidence interval:
## 0.02675907 0.04735473
## sample estimates:
## mean in group Informed trader mean in group Uninformed trader
##      0.02512583      -0.01193108
```

Test trader profits after redistribution and penalty payments between trader types in REG in both treatments and in all phases reported in the Online Appendix in Section 3.3

```
##
## Two Sample t-test
##
## data: PDPun by Role
## t = 3.5155, df = 1483, p-value = 0.0004521
## alternative hypothesis: true difference in means between group Informed trader and group Uninformed trader
## 95 percent confidence interval:
## 0.007319664 0.025798933
## sample estimates:
## mean in group Informed trader mean in group Uninformed trader
##      0.008267782      -0.008291516
```

Test trader profits before redistribution between regulatory regimes for uninformed traders in both treatments and in all phases reported in the Online Appendix in Section 3.3

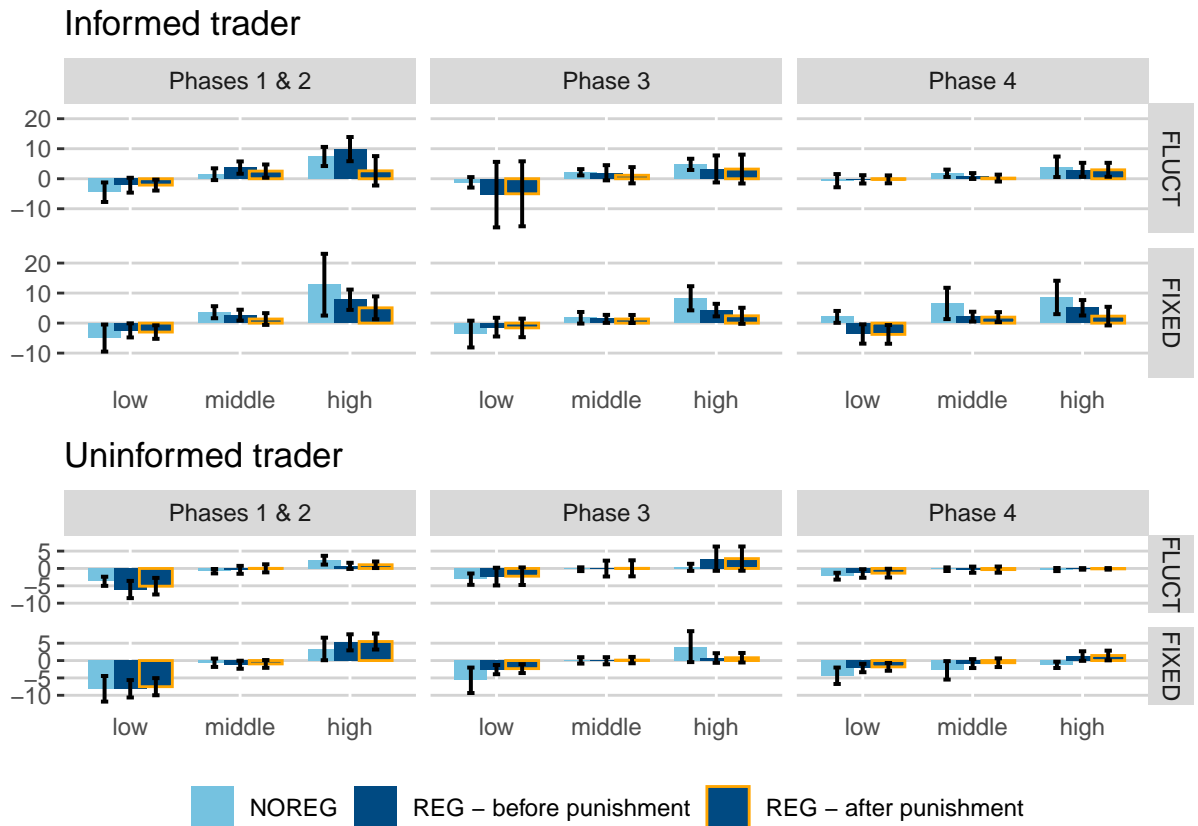
```
##
## Two Sample t-test
##
## data: PDbefore by IsREG
## t = -0.054506, df = 2302, p-value = 0.9565
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -0.007638846 0.007225684
## sample estimates:
## mean in group NOREG    mean in group REG
##      -0.01193108      -0.01172449
```

Test trader profits after redistribution and penalty payments between regulatory regimes for uninformed traders in both treatments and in all phases reported in the Online Appendix in Section 3.3

```
##
## Two Sample t-test
##
## data: PDPun by IsREG
```

```
## t = -0.96852, df = 2302, p-value = 0.3329
## alternative hypothesis: true difference in means between group NOREG and group REG is not equal to 0
## 95 percent confidence interval:
## -0.011008711 0.003729592
## sample estimates:
## mean in group NOREG    mean in group REG
##      -0.011931076      -0.008291516
```

Figure 10: [Figure OA8:] Mean gross trading profits per trader by treatment, regulatory regime, trader types, phase, and profit rank.



```
##          Role subTreatment  n positive no-positive no-neutral
## 1   Informed trader    FIXED   48      45         3        29
## 2 Uninformed trader    FIXED  96      85        11        52
## 3   Informed trader    FLUCT 144     138         6        99
## 4 Uninformed trader    FLUCT 144     111        33        66
## no-negative only-positive only-negative avg positive avg zero avg negative
## 1      23         11         2         40         0         8
## 2       2          1         6         32         1        63
## 3     87         59         6        121         0        23
## 4       8          0         6         38         7        99

##  regime_order          Role subTreatment  n positive no-positive
## 1      NR   Informed trader    FIXED  24         23         1
## 2      RN   Informed trader    FIXED  24         22         2
## 3      NR Uninformed trader    FIXED  48         45         3
## 4      RN Uninformed trader    FIXED  48         40         8
```

## 5	NR	Informed trader	FLUCT 72	69	3	
## 6	RN	Informed trader	FLUCT 72	69	3	
## 7	NR	Uninformed trader	FLUCT 72	55	17	
## 8	RN	Uninformed trader	FLUCT 72	56	16	
##	no-neutral	no-negative	only-positive	only-negative	avg positive	avg zero
## 1	17	11	6	1	19	0
## 2	12	12	5	1	21	0
## 3	27	0	0	3	17	0
## 4	25	2	1	3	15	1
## 5	47	42	26	3	61	0
## 6	52	45	33	3	60	0
## 7	36	4	0	2	17	4
## 8	30	4	0	4	21	3
##	avg negative					
## 1	5					
## 2	3					
## 3	31					
## 4	32					
## 5	11					
## 6	12					
## 7	51					
## 8	48					

Trading profit per share

$$\pi^{Before} = 1000 \cdot \frac{\sum_j \theta_j \cdot (P_j - BBV) \cdot Vol_j}{W_{t=0} \cdot \sum Vol_j}, \quad (7)$$

$$\pi^{After redistribution} = \pi^{Before} + 1000 \cdot \frac{Redist}{W_{t=0} \cdot \sum Vol_j}, \quad (8)$$

$$\pi^{After punishment} = \pi^{After redistribution} - 1000 \cdot \frac{Pen}{W_{t=0} \cdot \sum Vol_j}, \quad (9)$$

Table 22: [Table OA13:] Regressions of trading profits of informed traders by phase.

	Phases 1 and 2	Phases 1 and 2	Phases 1 and 2	Phase 3	Phase 3	Phase 3	Phase 4
(Intercept)	−0.30 (0.42)	−0.33 (0.40)	−0.36 (0.45)	−0.56 (0.39)	−0.62 (0.38)	−0.70 (0.38)	−0.11 (0.49)
subTreatmentFIXED	0.15 (0.27)	0.27 (0.26)	0.38 (0.30)	0.51 (0.32)	0.50 (0.30)	0.50 (0.28)	0.83* (0.39)
regime_orderRN	0.64* (0.27)	0.42 (0.26)	0.20 (0.30)	0.72* (0.31)	0.72* (0.29)	0.71** (0.27)	0.22 (0.36)
IsREGREG	0.54* (0.27)	0.16 (0.26)	−0.21 (0.28)	−0.41 (0.35)	−0.58 (0.33)	−0.74* (0.31)	−0.02 (0.43)
BBVCent	−0.00 (0.01)	−0.00 (0.01)	−0.01 (0.01)	−0.02** (0.01)	−0.03** (0.01)	−0.03*** (0.01)	−0.02 (0.01)
abs(BBVCent)	0.07*** (0.02)	0.06*** (0.02)	0.05** (0.02)	0.06*** (0.02)	0.06*** (0.02)	0.06*** (0.02)	0.05* (0.02)
Period0	0.03 (0.08)	0.10 (0.07)	0.17* (0.08)	0.28* (0.14)	0.31* (0.14)	0.34* (0.14)	−0.04 (0.19)
AIC	2993.62	2945.07	3055.98	1221.14	1219.87	1234.35	1400.38
BIC	3032.82	2984.28	3095.19	1254.11	1252.83	1267.32	1433.34
Log Likelihood	−1487.81	−1463.54	−1518.99	−601.57	−600.93	−608.18	−691.19
Num. obs.	576	576	576	288	288	288	288
Num. groups: Group	32	32	32	32	32	32	32
Var: Group (Intercept)	0.00	0.02	0.09	0.31	0.22	0.13	0.24
Var: Residual	9.99	9.16	11.07	3.41	3.45	3.70	6.67

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

Table 23: [Table OA14:] Regressions of trading profits of uninformed traders by phase.

	Phases 1 and 2	Phases 1 and 2	Phase 3	Phase 3	Phase 4	Phase 4
(Intercept)	0.66* (0.30)	0.57 (0.30)	0.20 (0.34)	0.19 (0.34)	−0.25 (0.48)	−0.28 (0.48)
subTreatmentFIXED	−0.04 (0.19)	−0.08 (0.19)	0.03 (0.25)	0.05 (0.25)	−0.08 (0.39)	−0.05 (0.39)
regime_orderRN	−0.23 (0.19)	−0.13 (0.19)	−0.30 (0.24)	−0.30 (0.24)	0.51 (0.35)	0.57 (0.35)
IsREGREG	−0.32 (0.20)	−0.10 (0.19)	0.54 (0.28)	0.60* (0.28)	−0.21 (0.42)	−0.12 (0.42)
BBVCent	0.02** (0.01)	0.02** (0.01)	0.01 (0.01)	0.01 (0.01)	0.04*** (0.01)	0.04*** (0.01)
abs(BBVCent)	−0.06*** (0.01)	−0.05*** (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.02)	−0.02 (0.02)
Period0	−0.04 (0.06)	−0.07 (0.06)	−0.20 (0.13)	−0.21 (0.13)	0.11 (0.19)	0.07 (0.18)
AIC	6031.01	6003.38	2693.61	2688.72	3126.19	3119.18
BIC	6076.45	6048.82	2732.81	2727.93	3165.40	3158.39
Log Likelihood	−3006.50	−2992.69	−1337.80	−1335.36	−1554.10	−1550.59
Num. obs.	1152	1152	576	576	576	576
Num. groups: Group	32	32	32	32	32	32
Var: Group (Intercept)	0.00	0.00	0.11	0.12	0.27	0.25
Var: Residual	10.64	10.39	5.84	5.78	12.46	12.32

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .



## Observers performance

[Table OA15:] Observer performance by treatment and starting phase.

##	FIXEDNR	FIXEDRN	FLUCTNR	FLUCTRN	pvalue
## Selected	0.13078704	0.13194444	0.09606481	0.15972222	0.7893392
## Any selected	0.6250000	0.8229167	0.5208333	0.7083333	0.3518001
## Unveiled	0.1423611	0.1562500	0.1215278	0.2083333	0.8012017
## Any unveiled	0.3750000	0.4062500	0.2500000	0.4270833	0.6968795

## EET test

Figure 11: [Figure OA10:] <x, y>-scores and EET archetypes of participants by role.

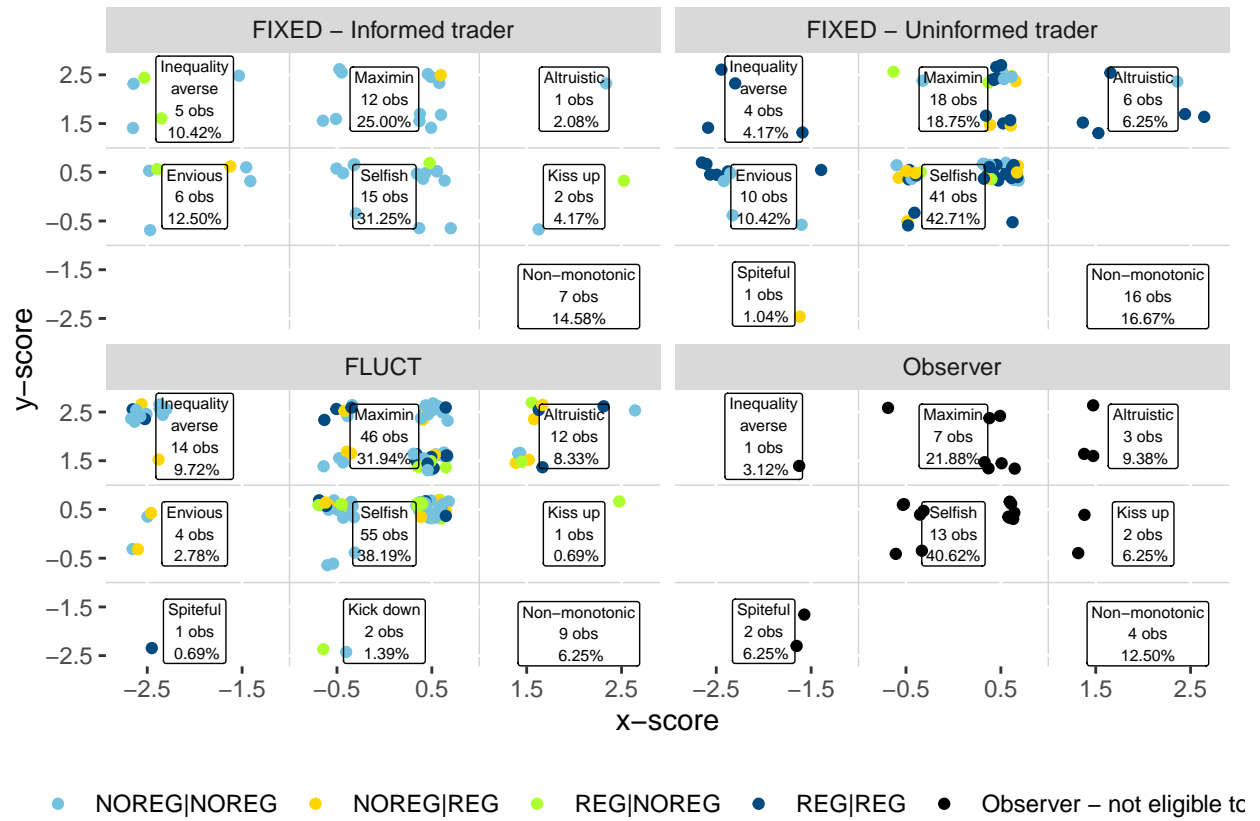
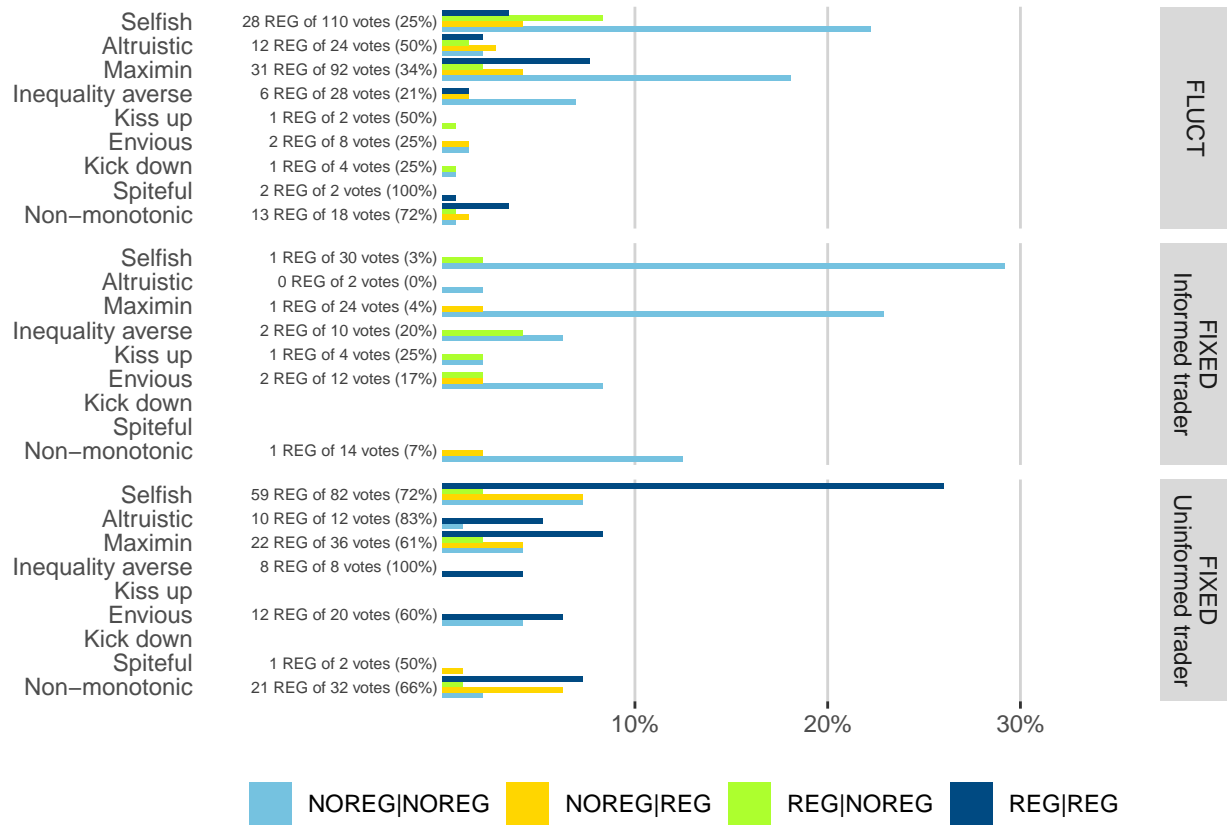


Figure 12: [Figure OA11:] Voting behavior by EET archetypes, treatment, and trader types.



Test rank differences of archetypes between roles reported in the Online Appendix in Section 4.1

```
##
## Kruskal-Wallis rank sum test
##
## data: EET by ExpectedRole
## Kruskal-Wallis chi-squared = 3.8758, df = 3, p-value = 0.2752
```

Test of non-monotonic preferences between roles reported in the Online Appendix in Section 4.1

```
##
## Kruskal-Wallis rank sum test
##
## data: EET == "Non-monotonic" by ExpectedRole
## Kruskal-Wallis chi-squared = 6.989, df = 3, p-value = 0.07225
```

Test voting behavior between EET archetypes for informed traders in treatment FIXED reported in the Online Appendix in Section 4.1

```
##
## Kruskal-Wallis rank sum test
##
## data: votes2Referenda by EET
## Kruskal-Wallis chi-squared = 6.7812, df = 5, p-value = 0.2374
```

Test voting behavior between EET archetypes for uninformed traders in treatment FIXED reported in the Online Appendix in Section 4.1

```
##
## Kruskal-Wallis rank sum test
##
## data: votes2Referenda by EET
## Kruskal-Wallis chi-squared = 5.5764, df = 5, p-value = 0.3496

Test voting behavior between EET archetypes for traders in treatment FLUCT reported in the Online
Appendix in Section 4.1

##
## Kruskal-Wallis rank sum test
##
## data: votes2Referenda by EET
## Kruskal-Wallis chi-squared = 8.6361, df = 7, p-value = 0.2798

Test voting behavior between EET monotonicity for traders in treatment FLUCT reported in the Online
Appendix in Section 4.1

##
## Kruskal-Wallis rank sum test
##
## data: votes2Referenda by EET != "Non-monotonic"
## Kruskal-Wallis chi-squared = 8.2969, df = 1, p-value = 0.003971
```

---

## Participant pool characteristics and questionnaire analyses

```
##          Volume LimitVolume TradingProfit ProfitPeriod
## mean      20.81192      33.95573  1.037046e-16    30.053729
## geoMean    10.01735      15.21721  1.510263e+01    28.622808
## sd         25.38619      59.10022  3.345684e+02     8.253876
## median     13.50000      20.00000  0.000000e+00    30.000000
## minimum     0.00000       0.00000 -7.007700e+03     0.000000
## maximum    307.00000     2019.00000  5.721800e+03    250.323450
## n          3456.00000    3456.00000  3.456000e+03   3456.000000
```

[Table OA16:] Traders' demographics by treatment and starting phase.

```
##          X1          X2          X3          X4          pvalue
## Treatment  FIXEDNR  FIXEDRN  FLUCTNR  FLUCTRN          pvalue
## V1         0.4722222 0.4583333 0.3472222 0.4027778 0.535078229178864
## V2         0.5277778 0.5277778 0.6250000 0.5833333 0.668593401614162
## V3         0.8750000 0.8750000 0.9027778 0.8888889 0.94154799371363
## age        22.18056  22.90278  22.81944  21.88889 0.296206297133256
## RiskGeneral 4.916667  4.611111  4.694444  4.805556 0.924157740070524
## RiskFinancial 4.000000  3.722222  3.847222  3.791667 0.897264357723509
## LossAversion 3.944444  4.388889  3.930556  4.083333 0.604592917582877
## PunPerceived 4.125000  3.930556  4.138889  4.263889 0.441273329732195
```

## Final payouts

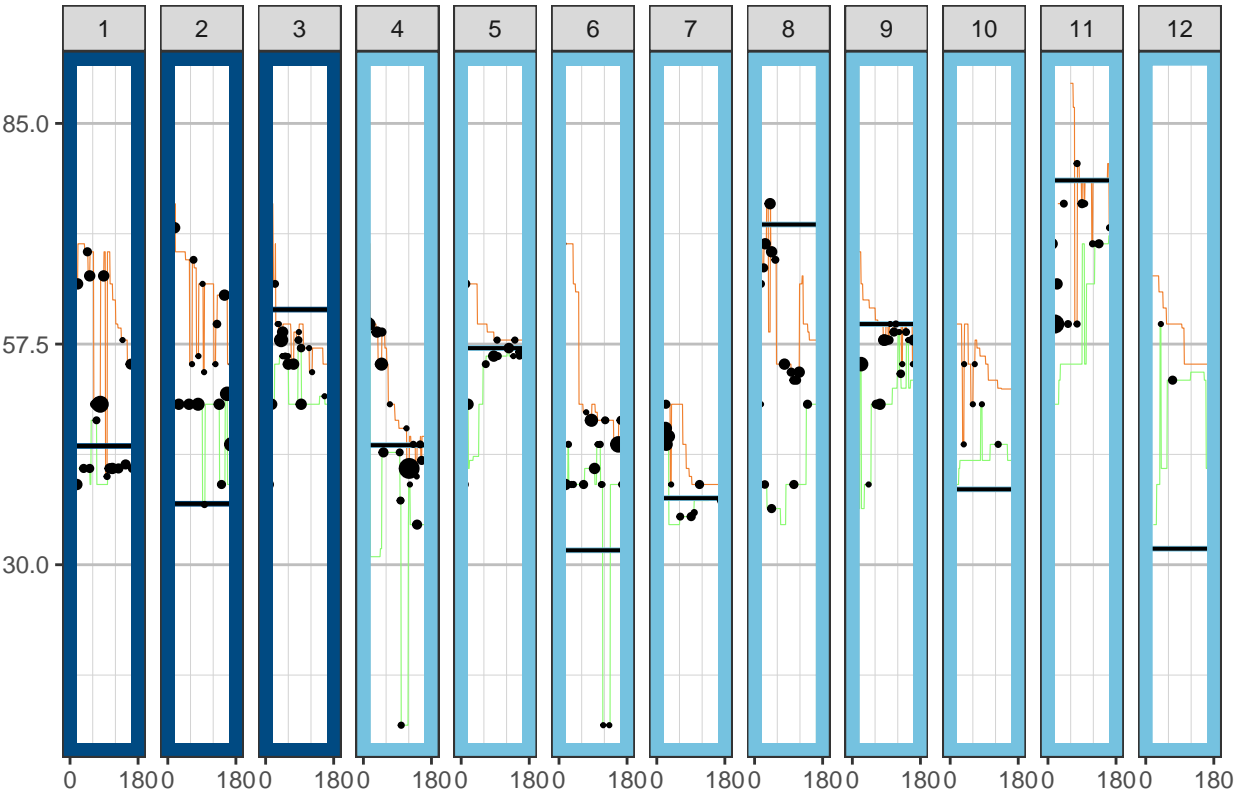
```
##          TotProfit ObserverProfit Observer...FIXED Observer...FLUCT
## mean      34.001548      29.218750      28.68750      29.750000
## sd         6.497281       7.827719       8.25202       7.611395
## median     34.022641      30.000000      30.00000      29.500000
## minimum     5.000000      10.000000      10.00000      17.000000
## maximum    71.269345      44.000000      39.00000      44.000000
```

## n	320.000000	32.000000	16.00000	16.000000
##	TraderProfit	Trader...FIXED	Trader...FLUCT	Informed.trader
## mean	34.532970	34.317941	34.747999	31.92104
## sd	6.121212	7.543864	4.265852	10.63102
## median	34.131888	34.000000	34.392818	30.60413
## minimum	5.000000	5.000000	13.792453	0.00000
## maximum	71.269345	71.269345	50.423298	250.32345
## n	288.000000	144.000000	144.000000	1392.00000
##	Uninformed.trader			
## mean	29.168702			
## sd	7.594293			
## median	29.976393			
## minimum	0.000000			
## maximum	141.042119			
## n	2640.000000			

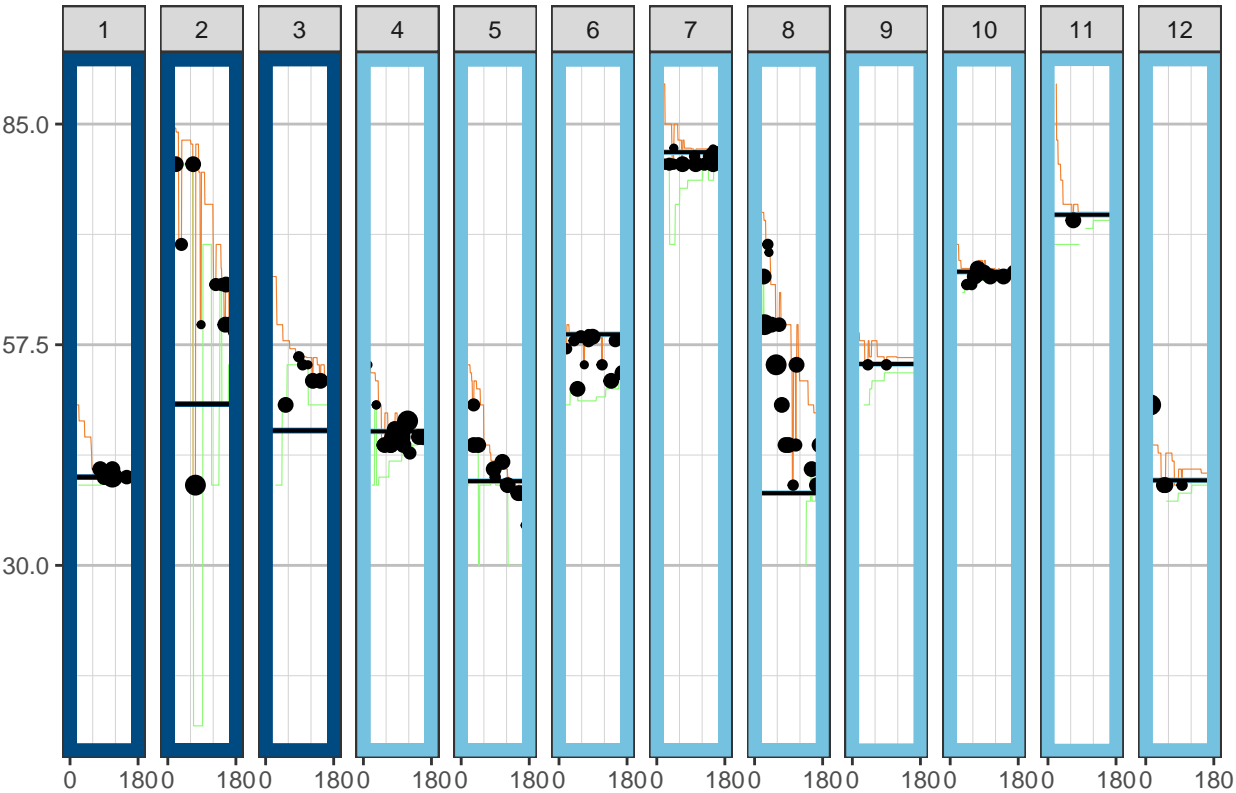
---

Graphical representation of trading activity

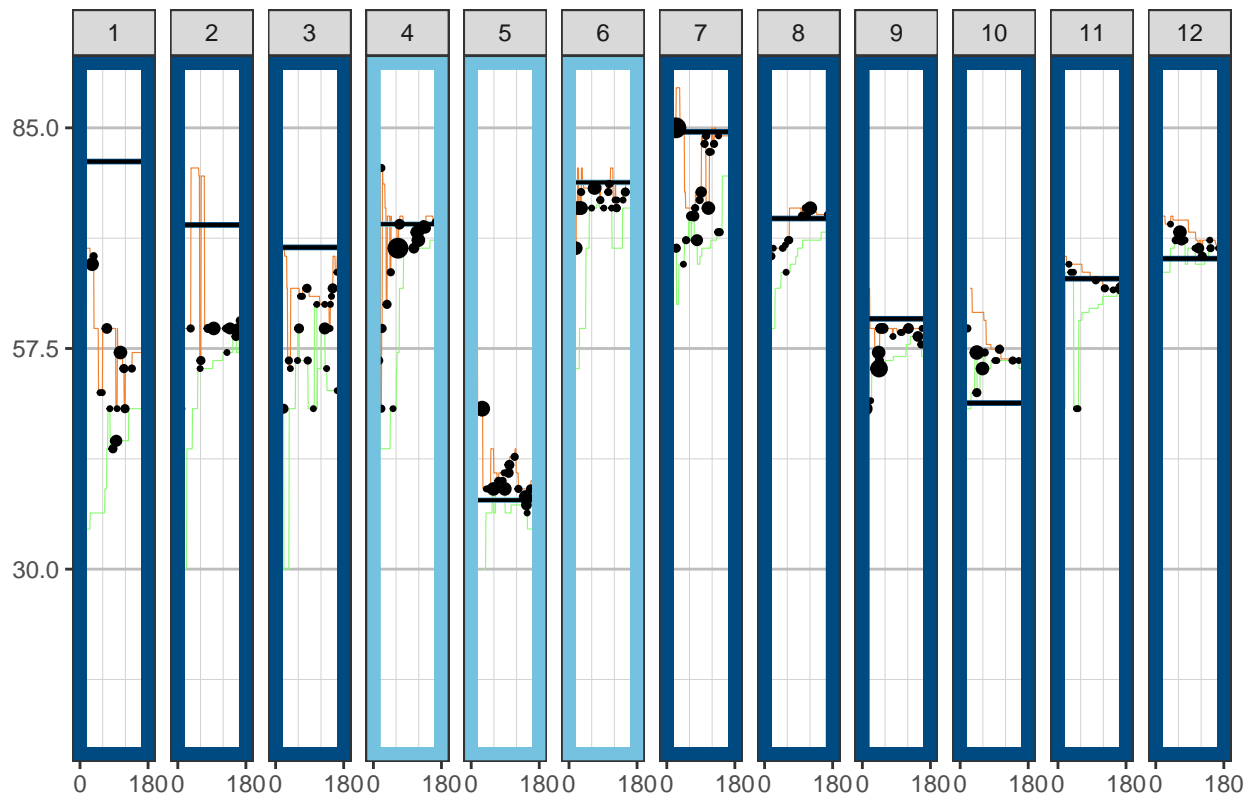
Cohort 1 – time series



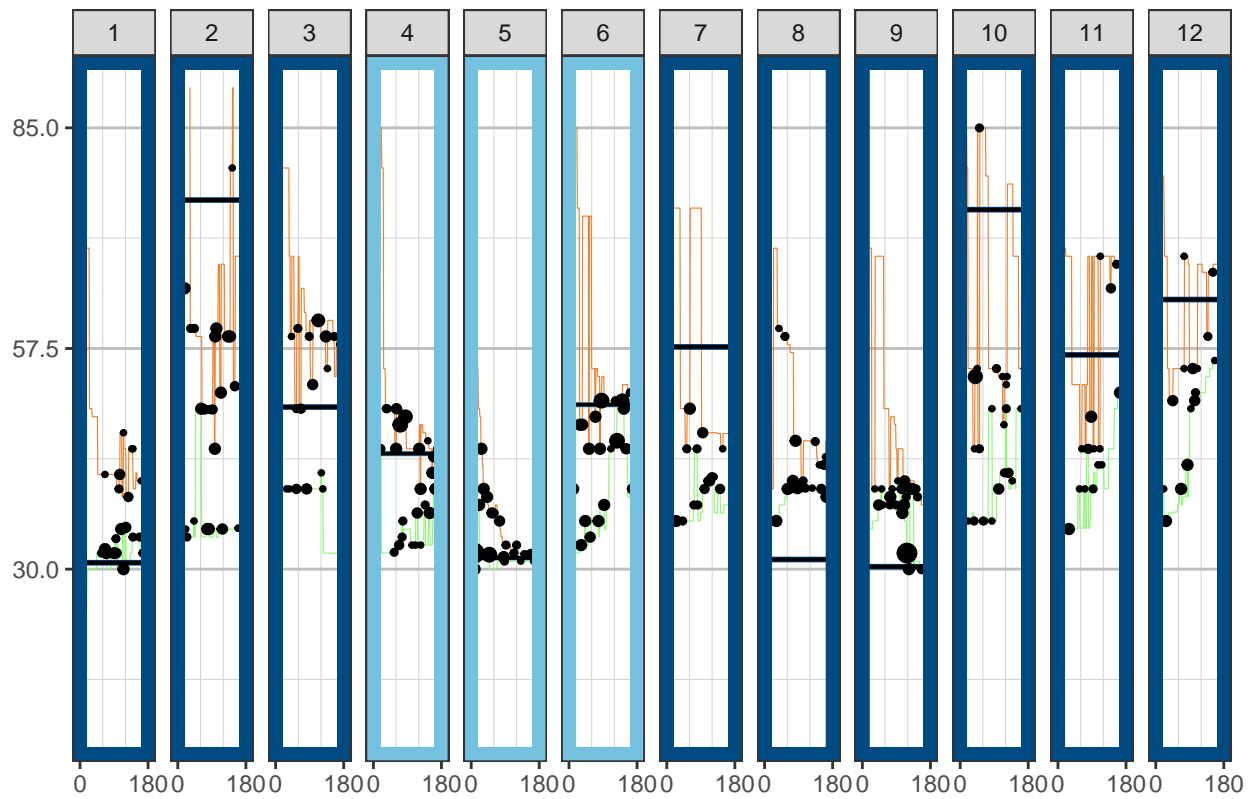
Cohort 2 – time series



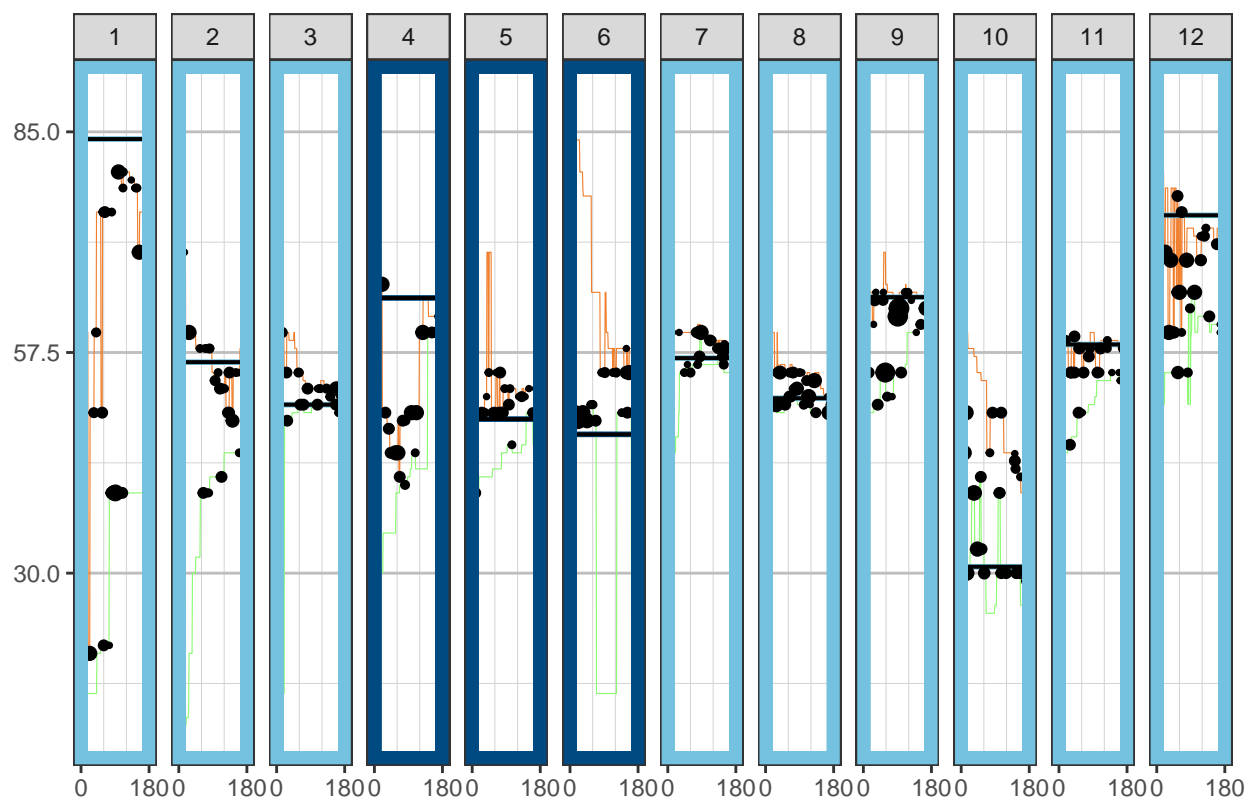
Cohort 3 – time series



Cohort 4 – time series

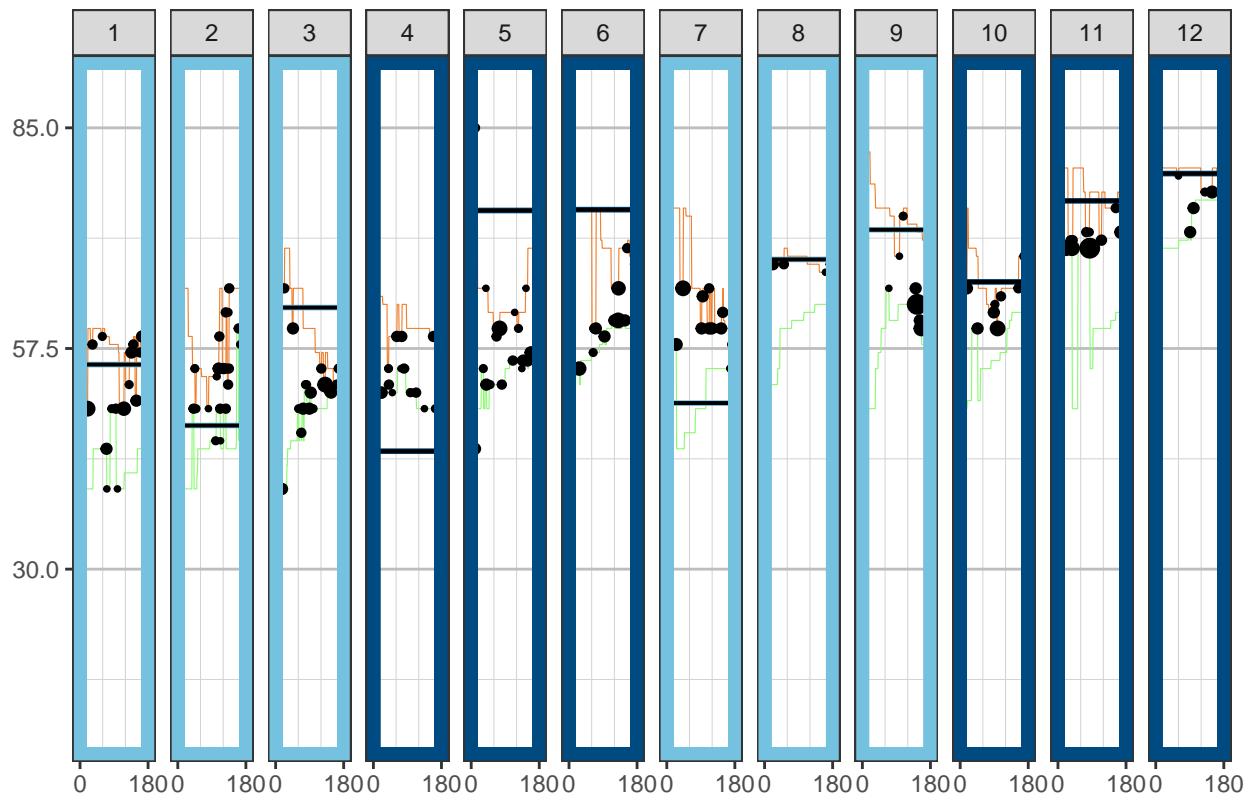


Cohort 5 – time series

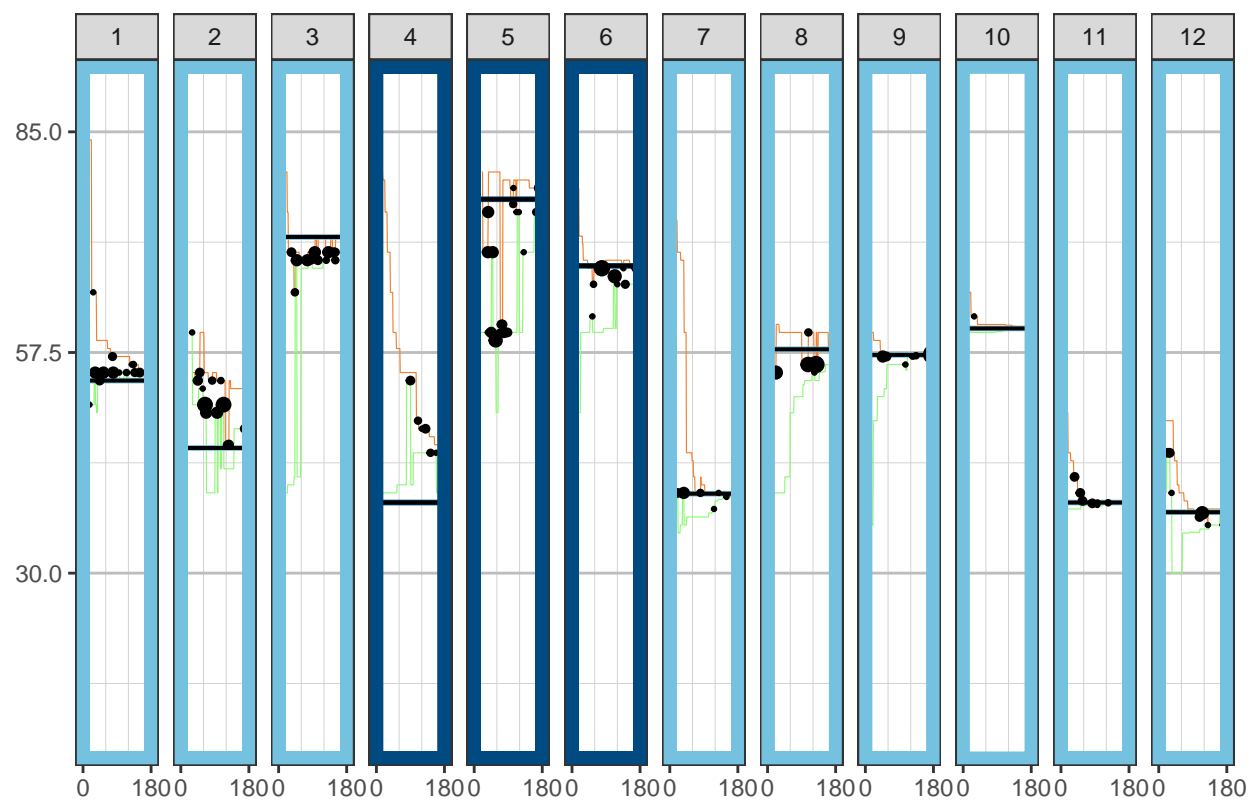




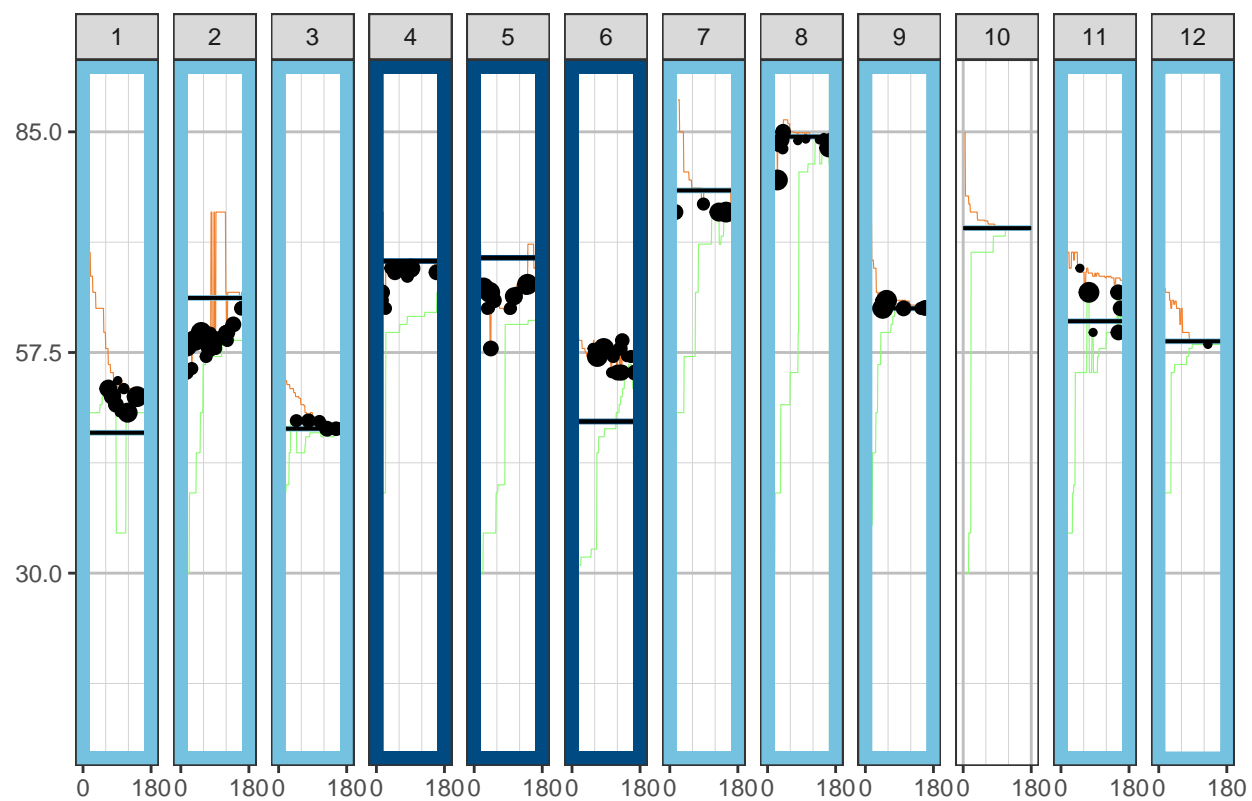
Cohort 6 – time series



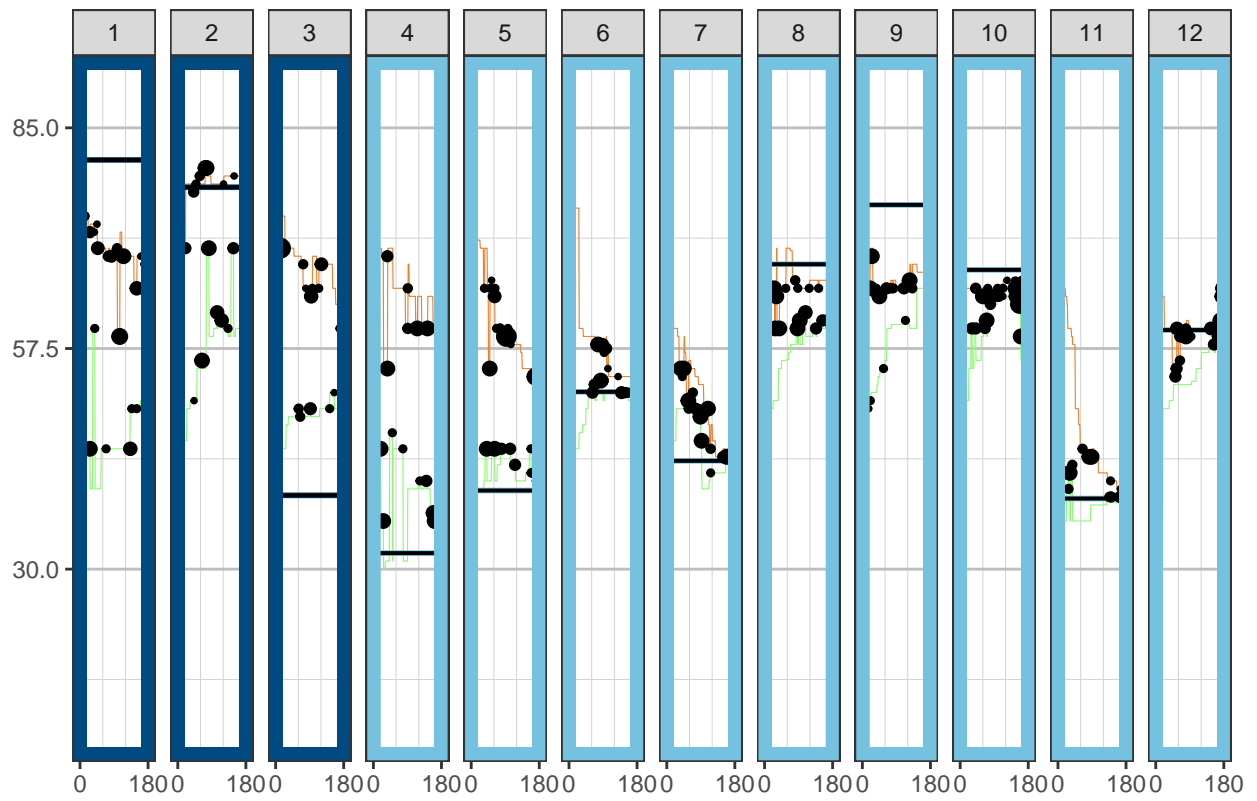
Cohort 7 – time series



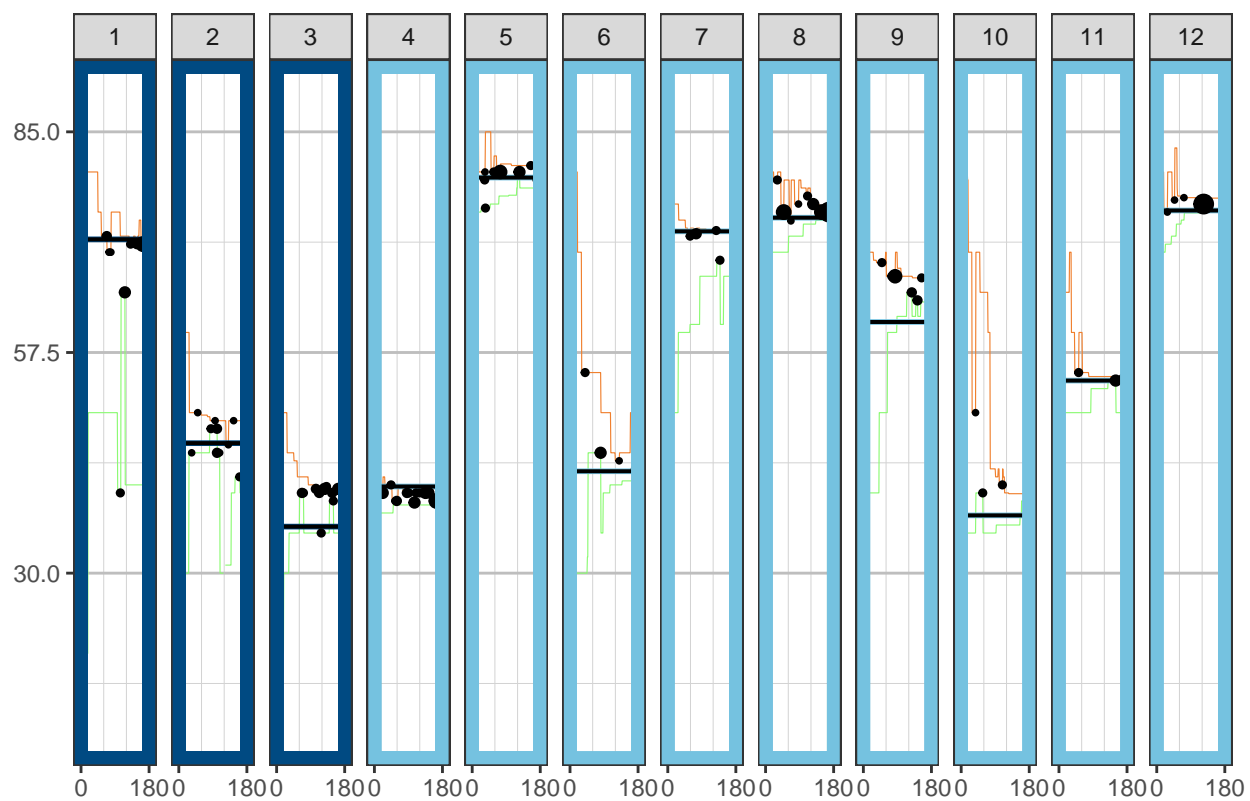
Cohort 8 – time series



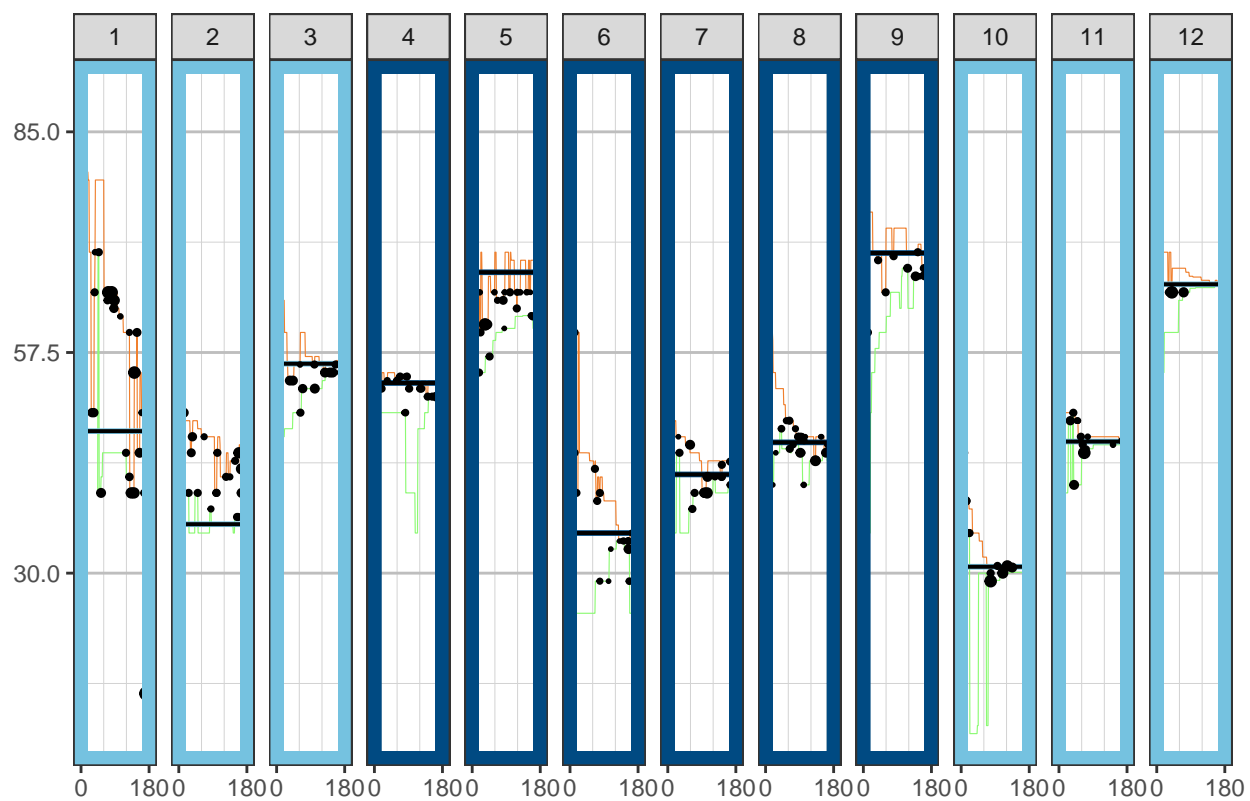
Cohort 9 – time series



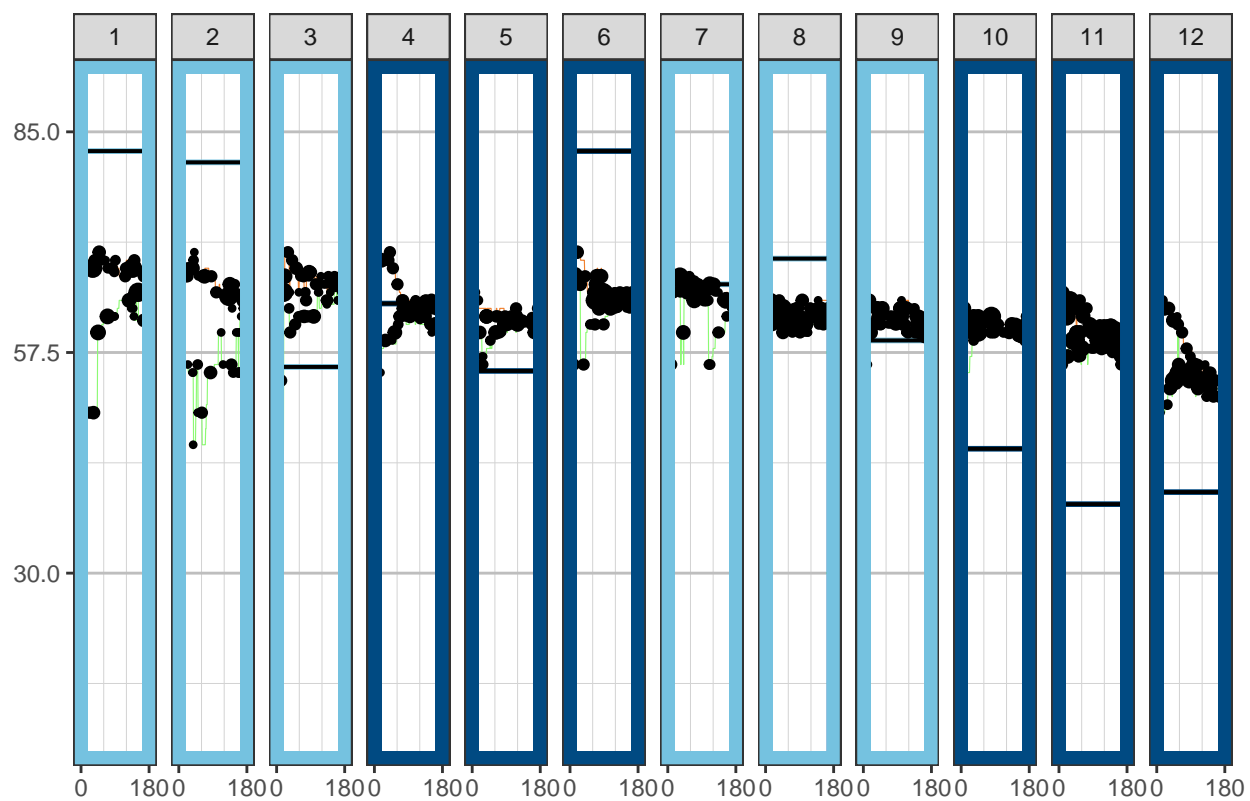
Cohort 10 – time series



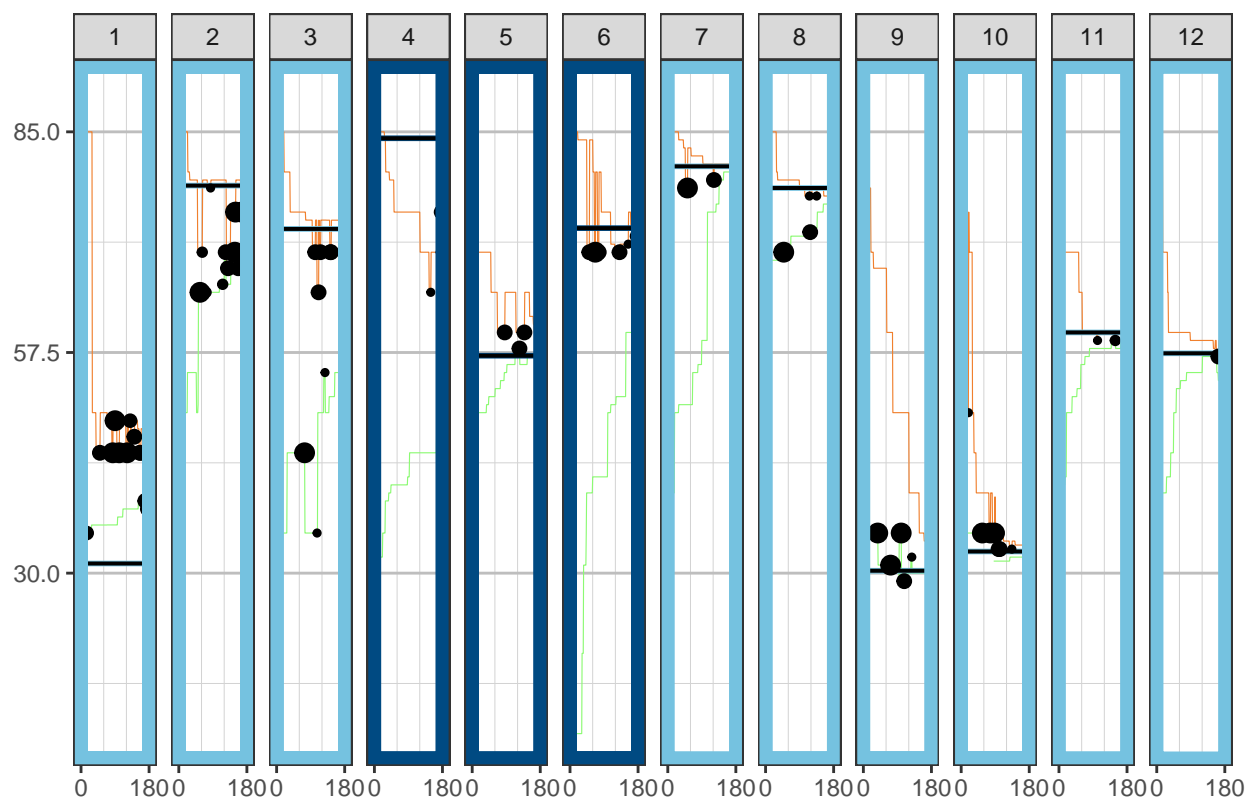
Cohort 11 – time series



Cohort 12 – time series

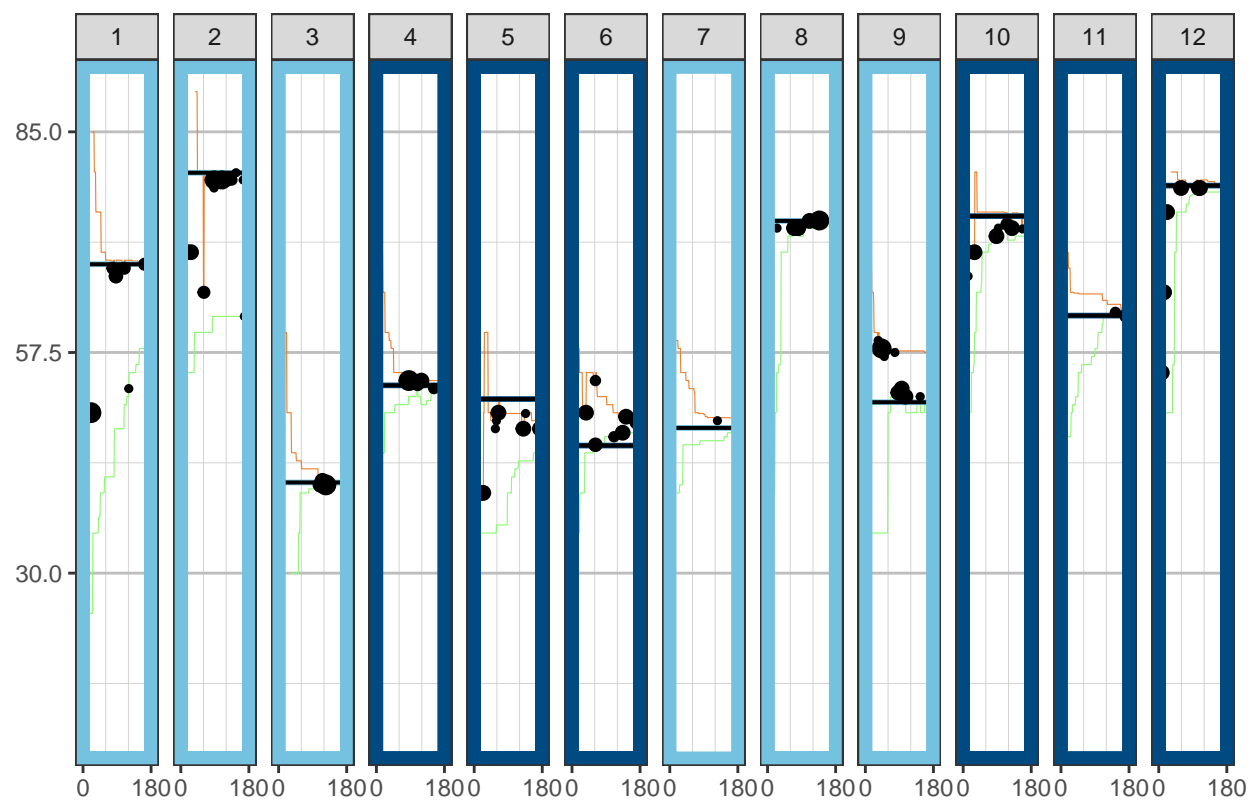


Cohort 13 – time series

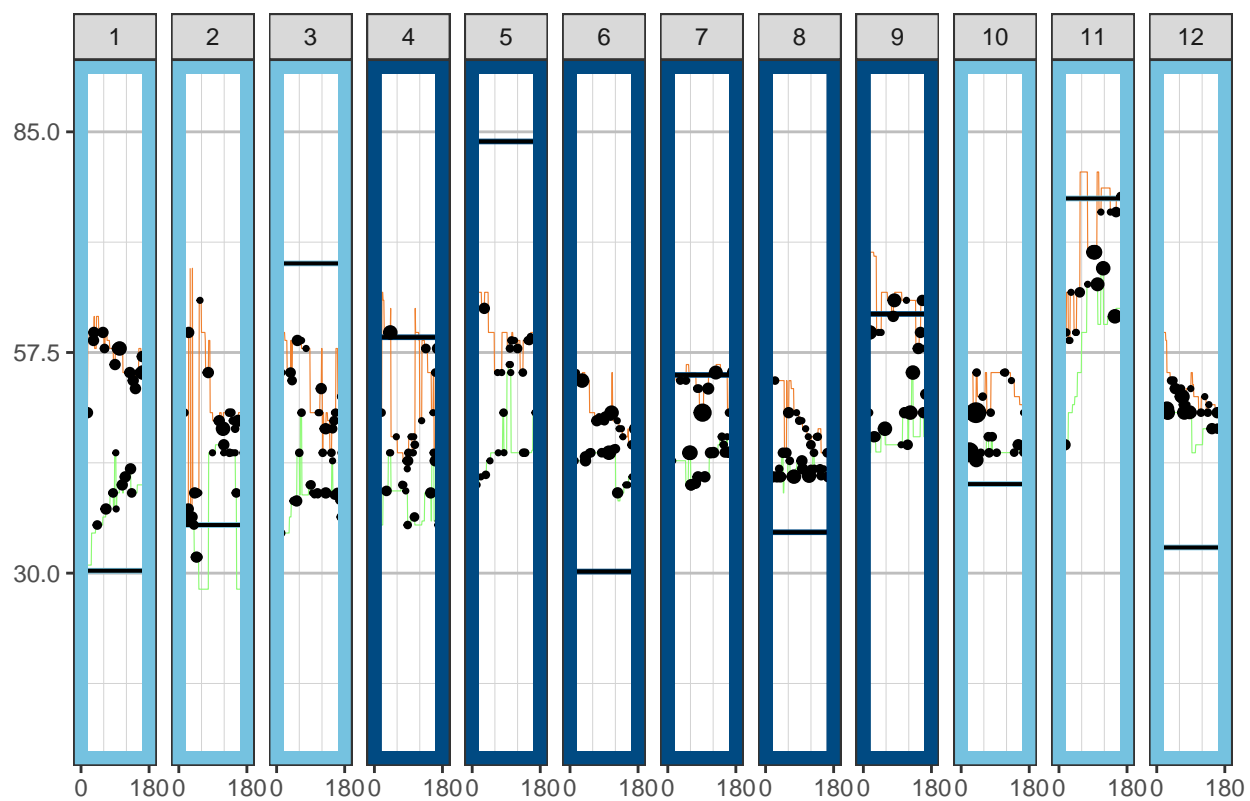




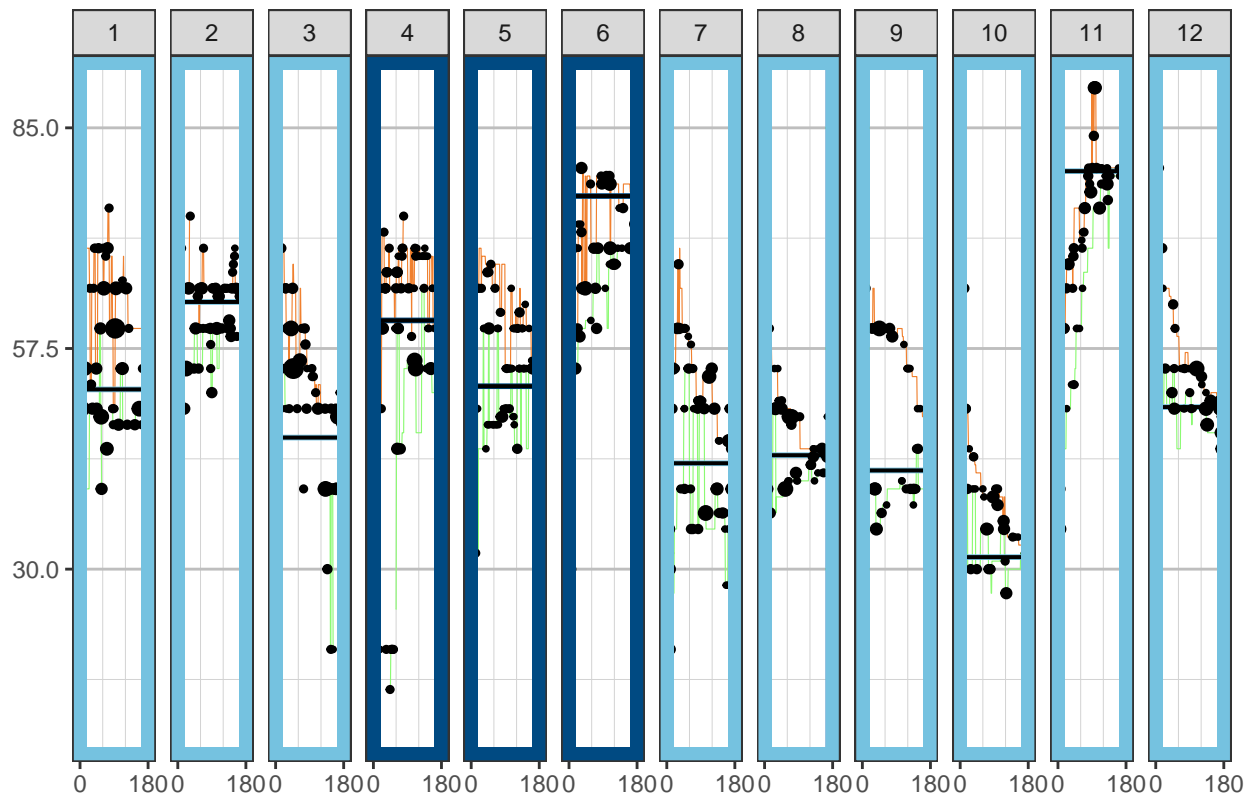
Cohort 14 – time series



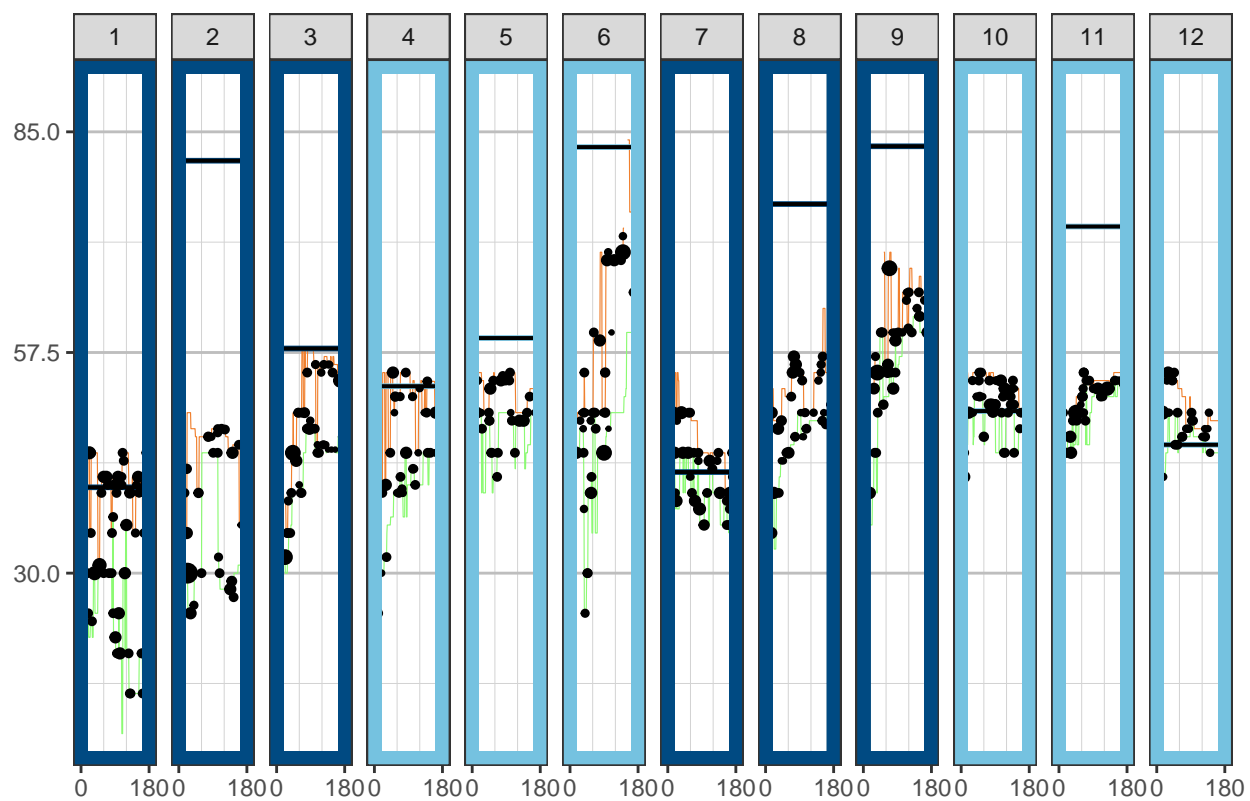
Cohort 15 – time series



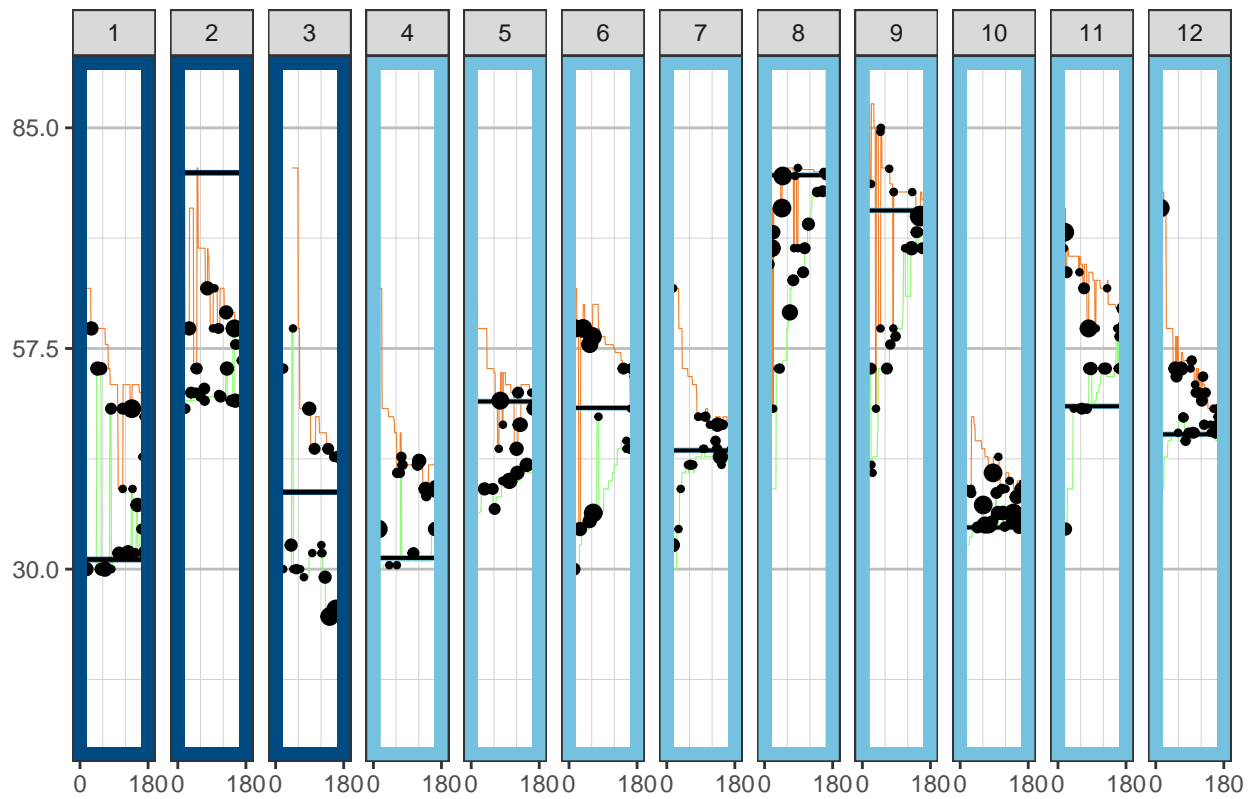
Cohort 16 – time series



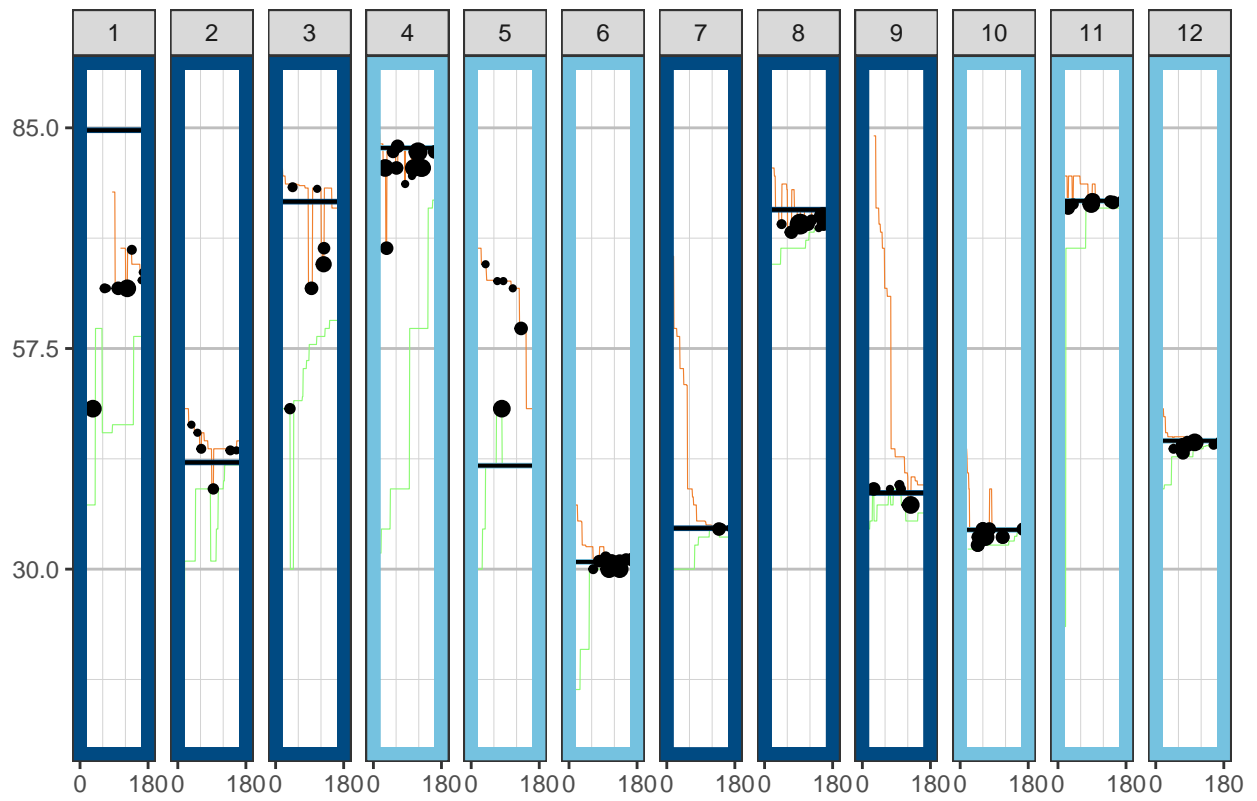
Cohort 17 – time series



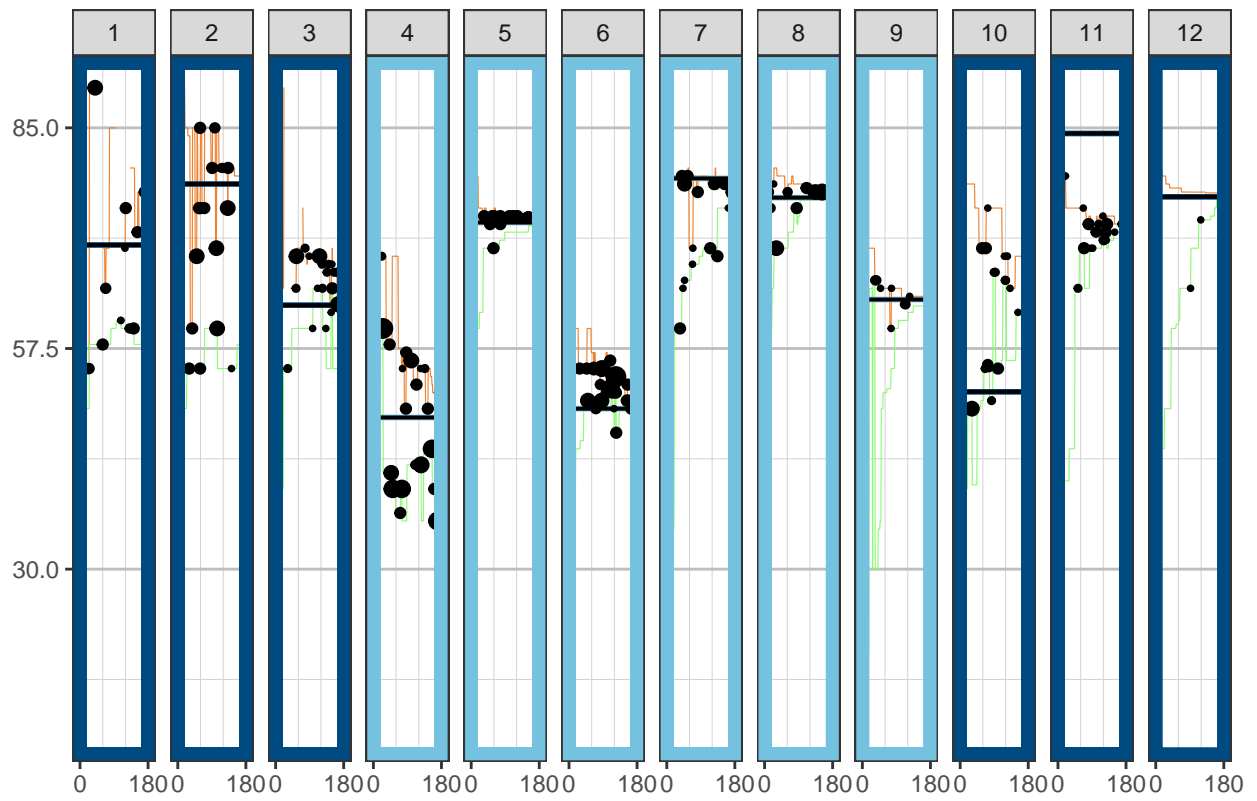
Cohort 18 – time series



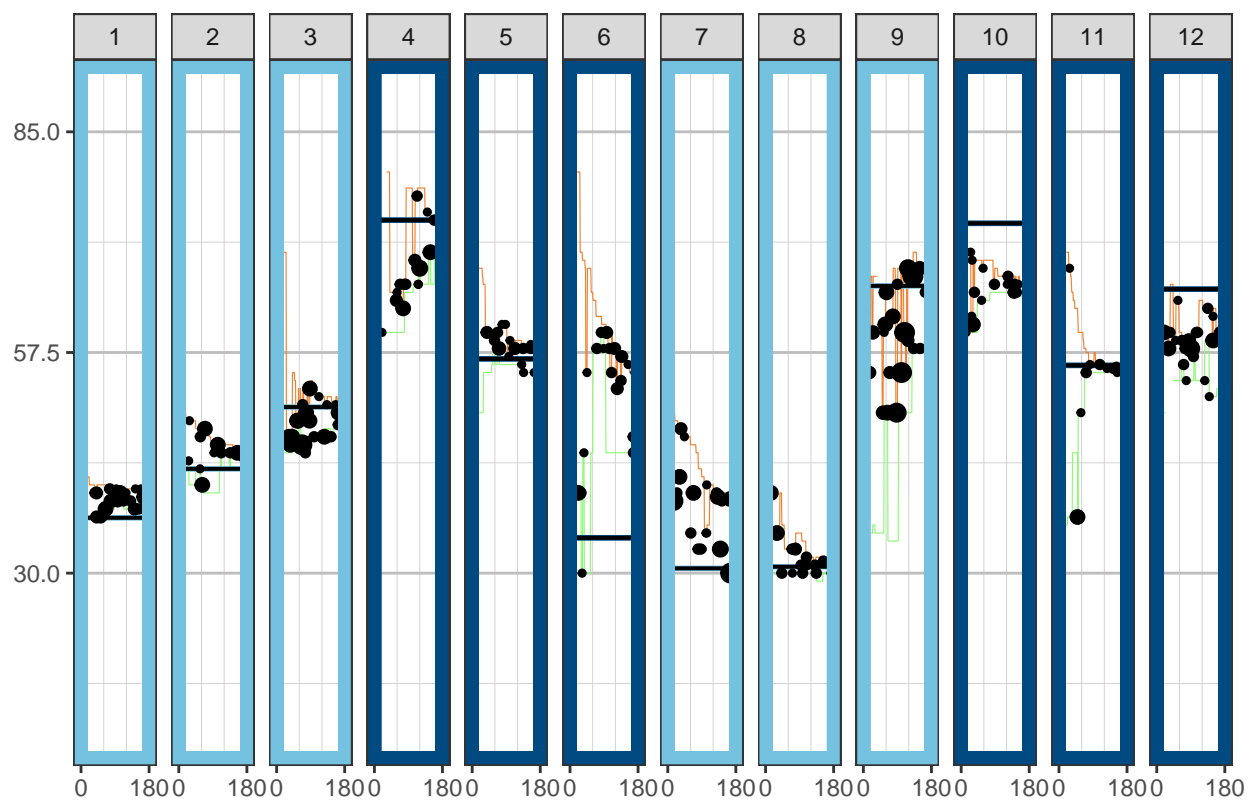
Cohort 19 – time series



Cohort 20 – time series

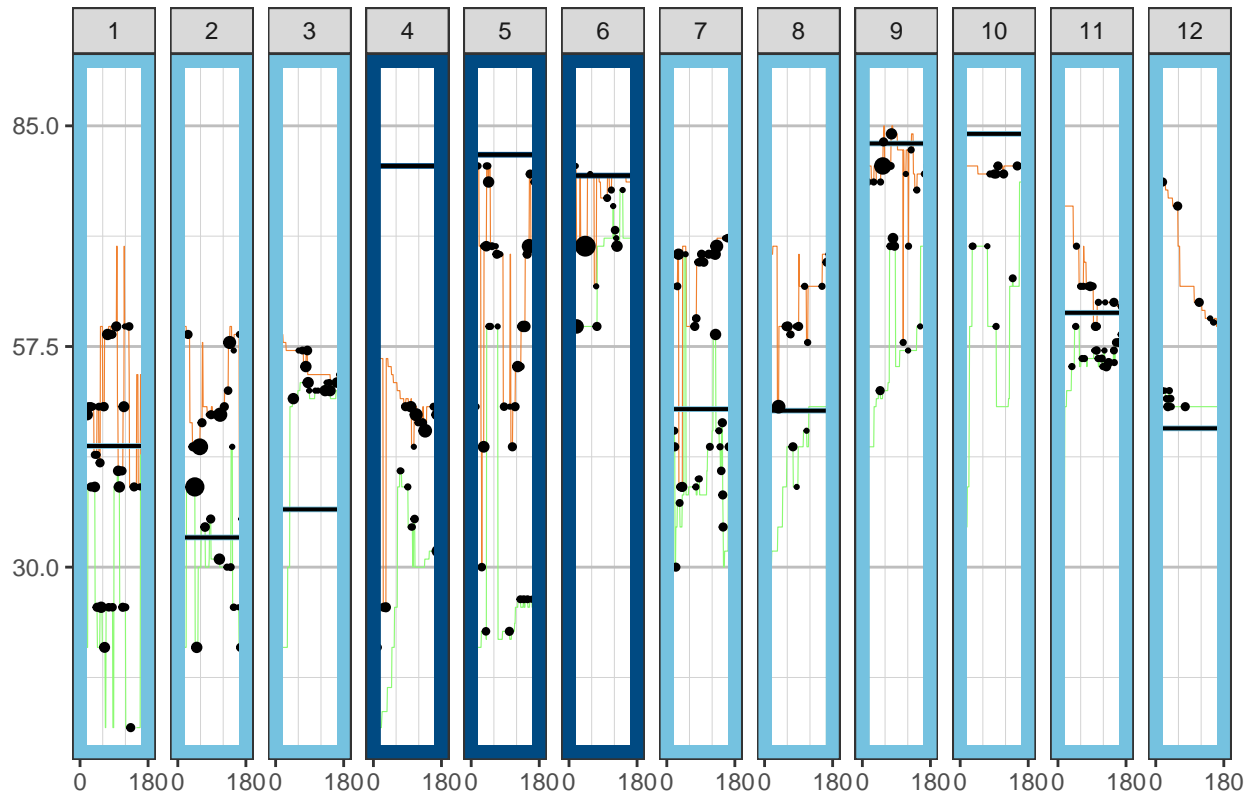


Cohort 21 – time series

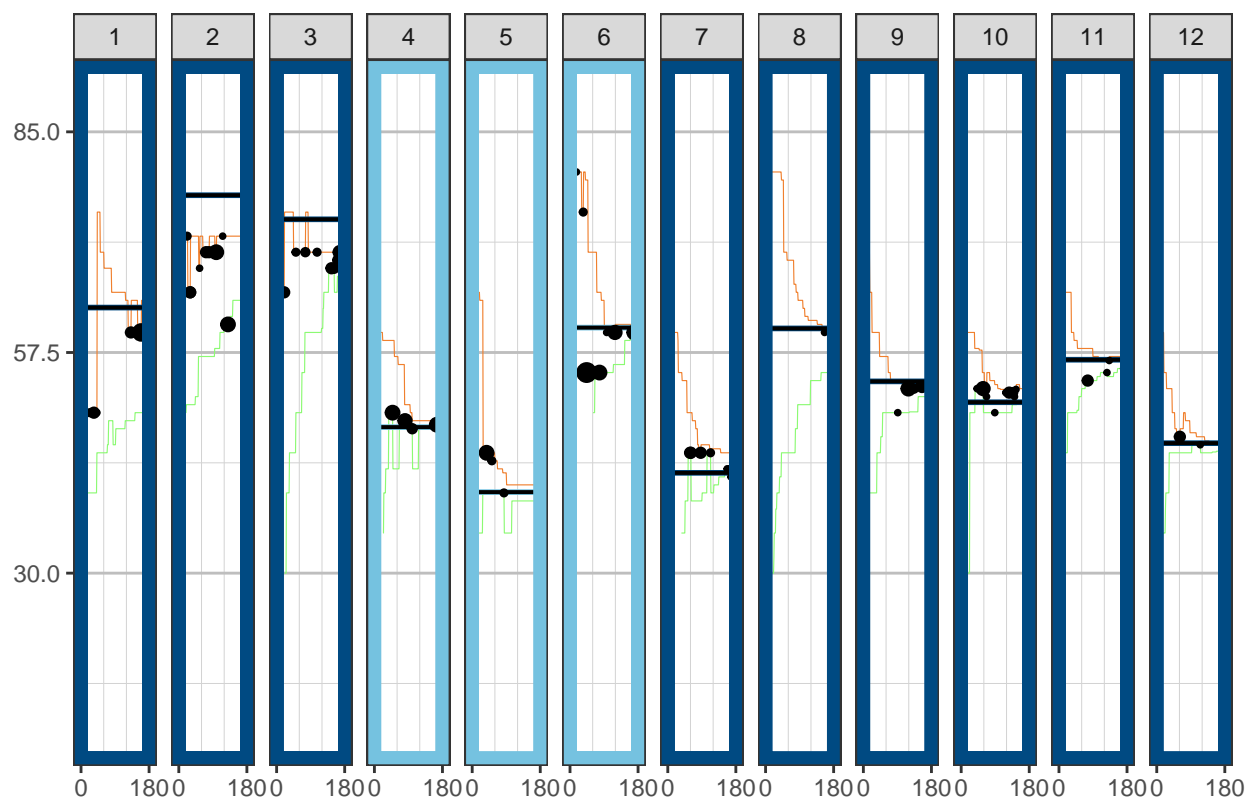




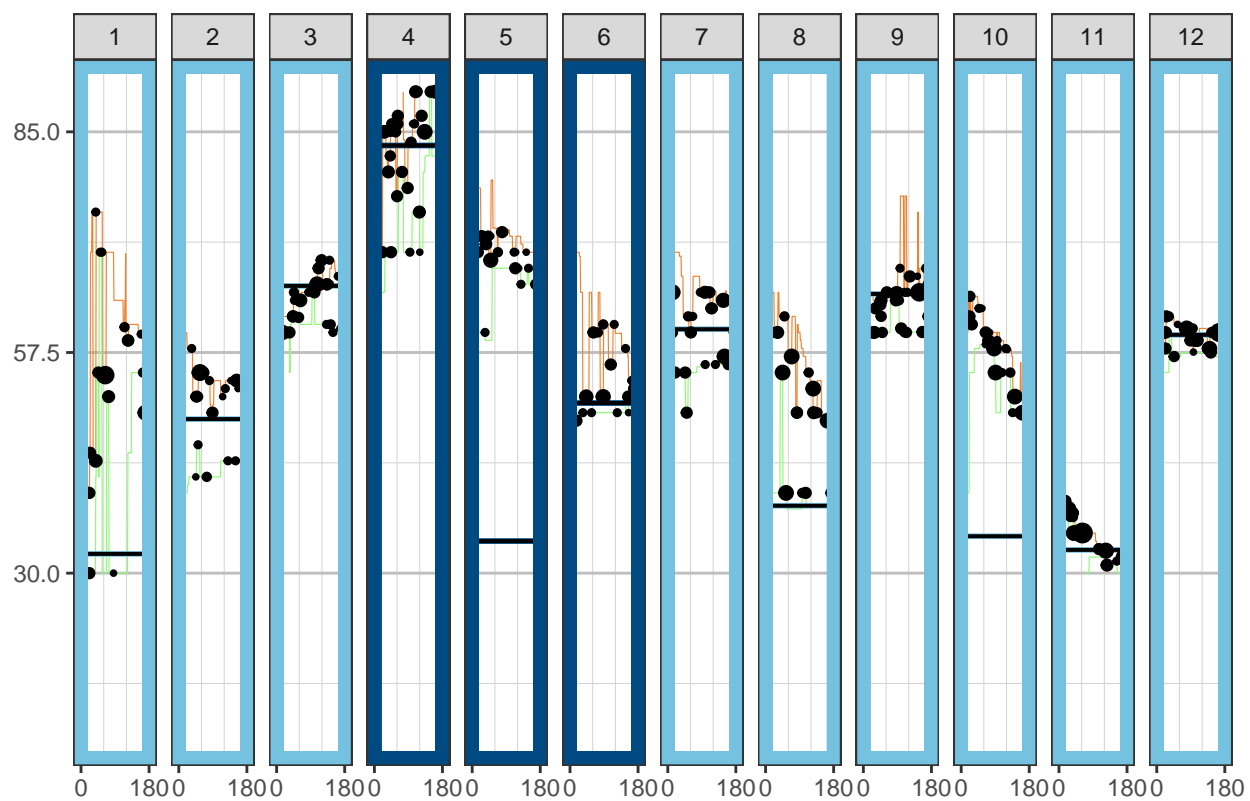
Cohort 22 – time series



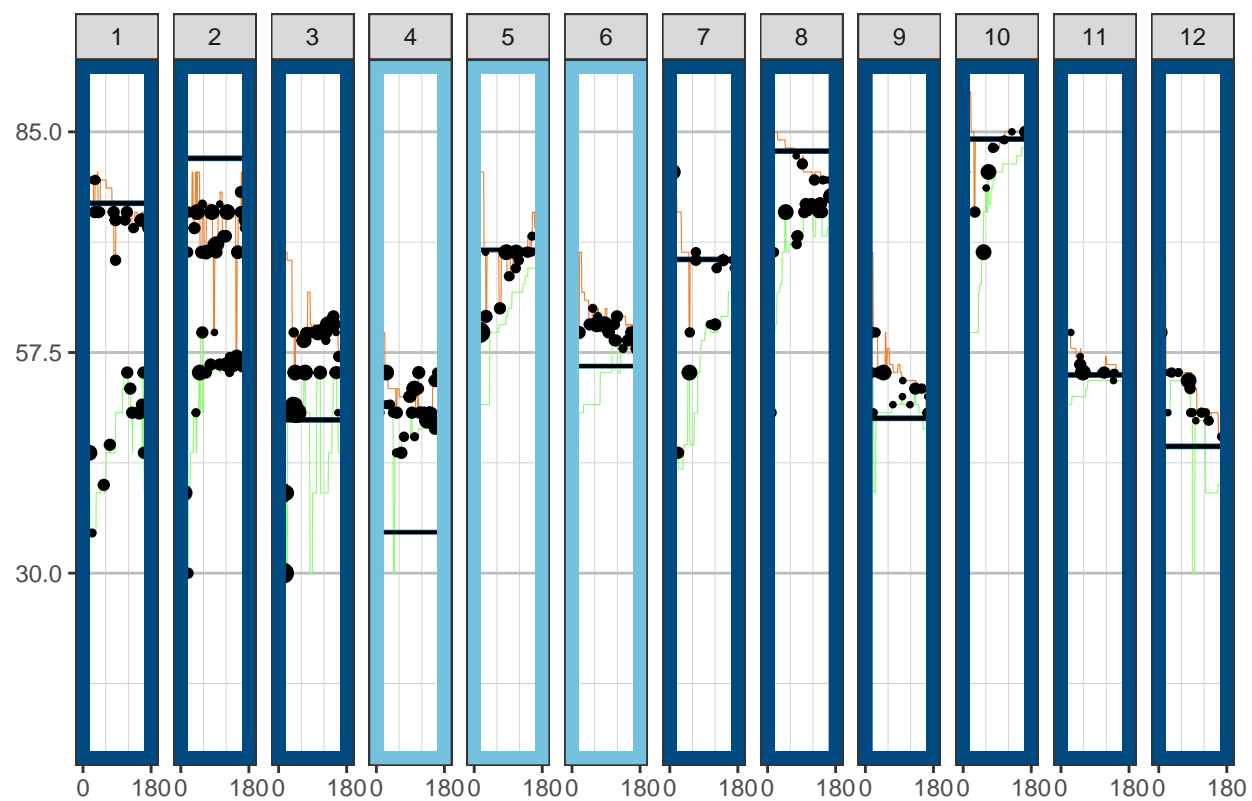
Cohort 23 – time series



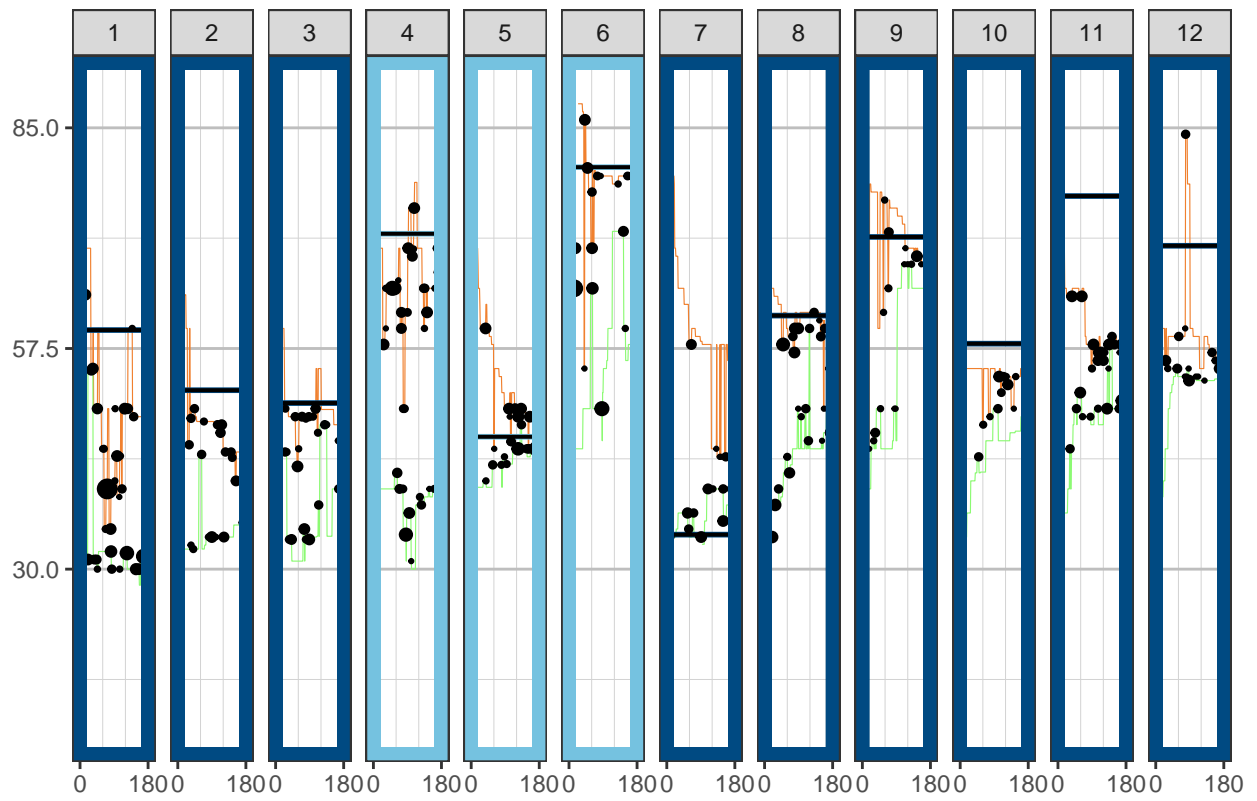
Cohort 24 – time series



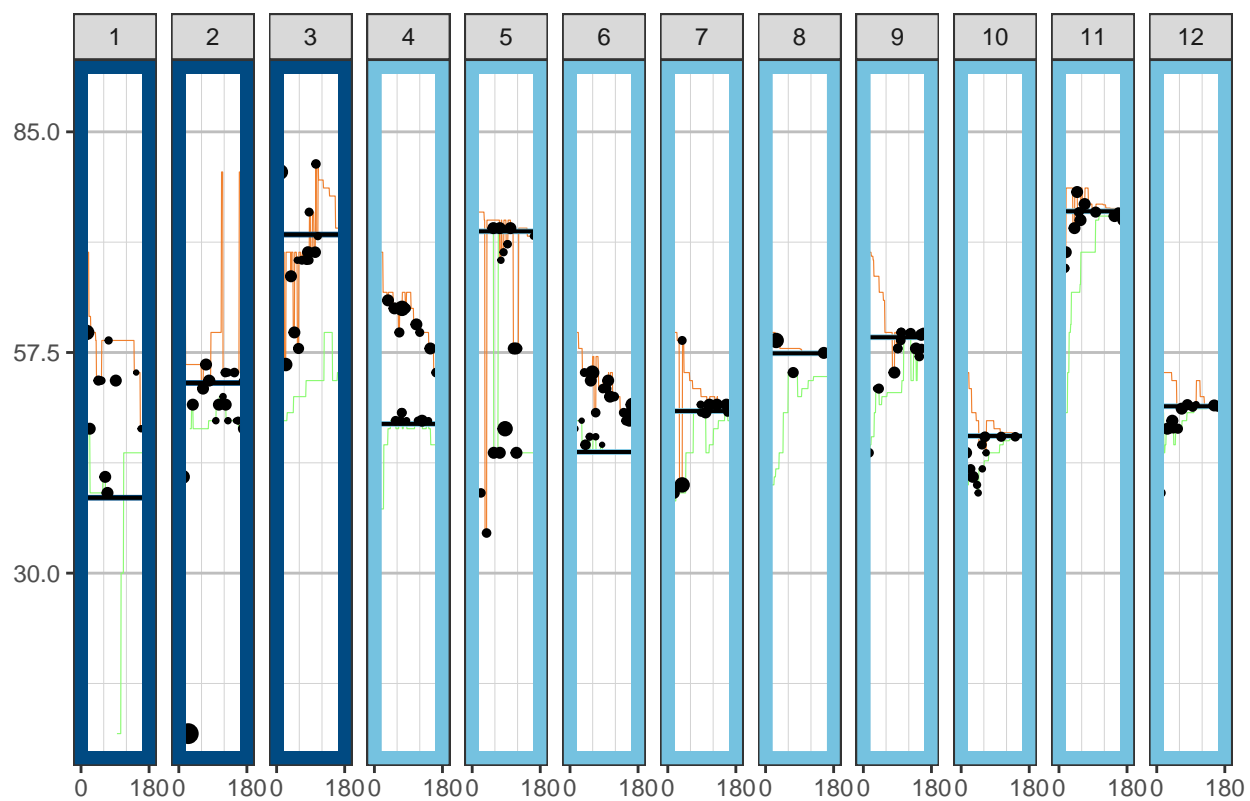
Cohort 25 – time series



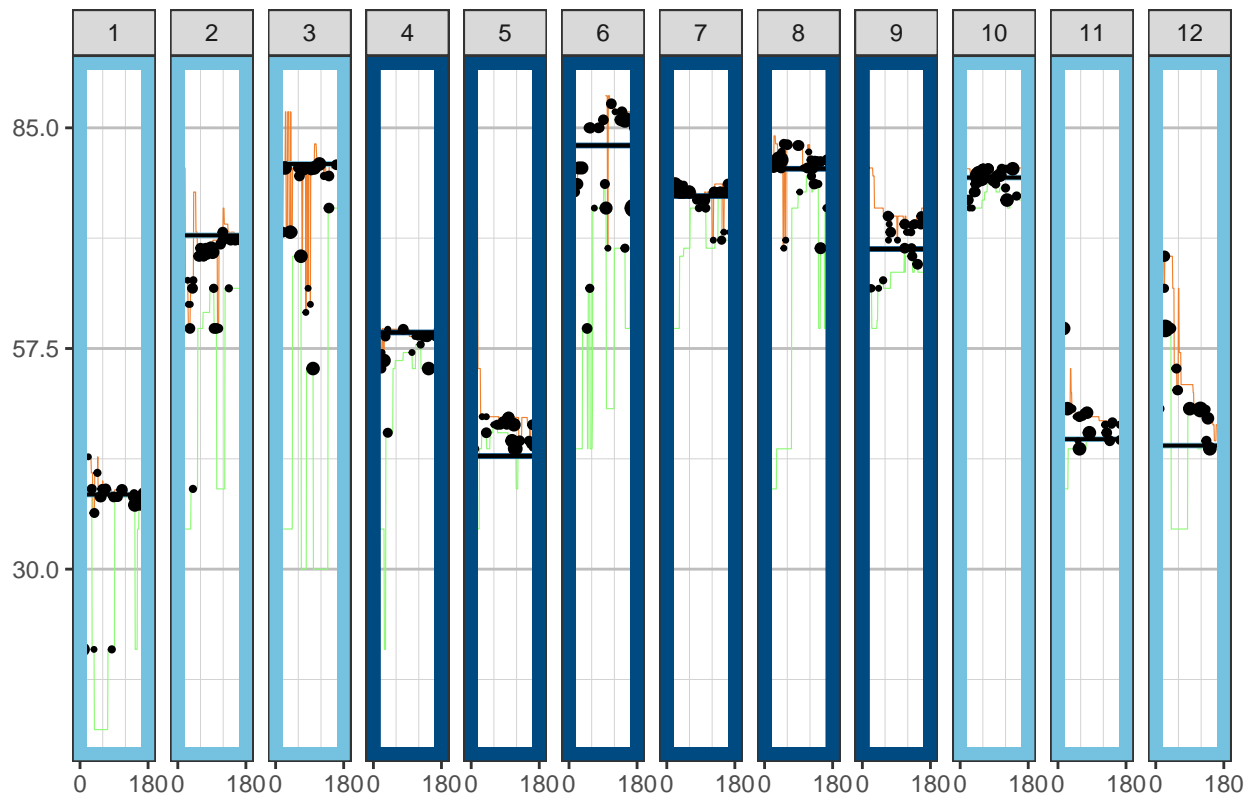
Cohort 26 – time series



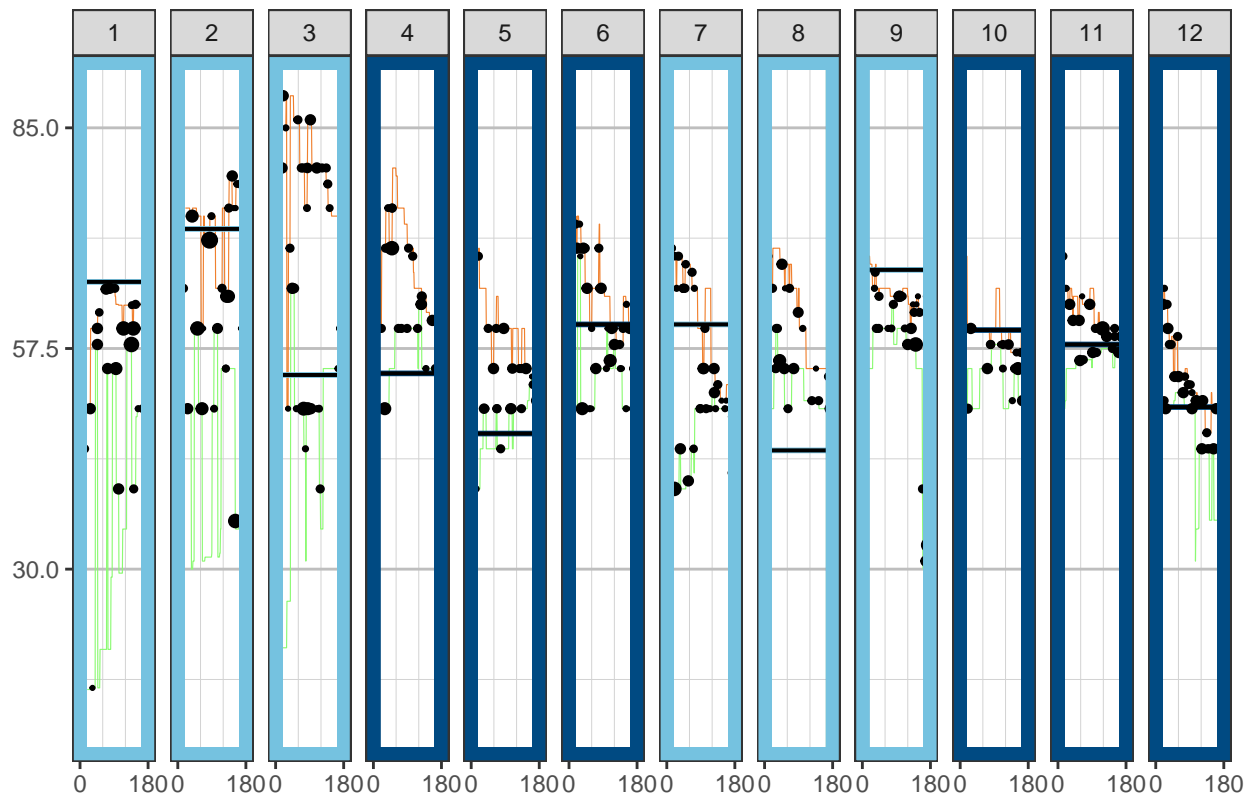
Cohort 27 – time series



Cohort 28 – time series

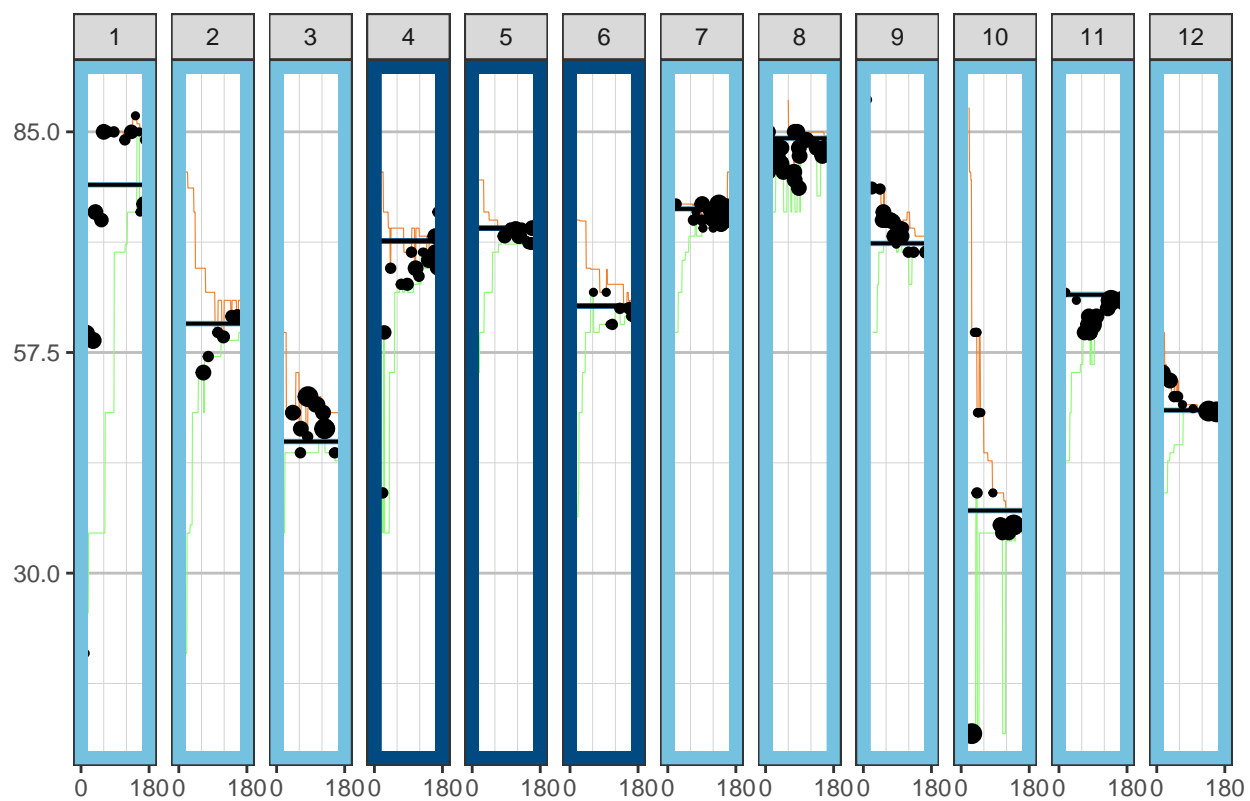


Cohort 29 – time series

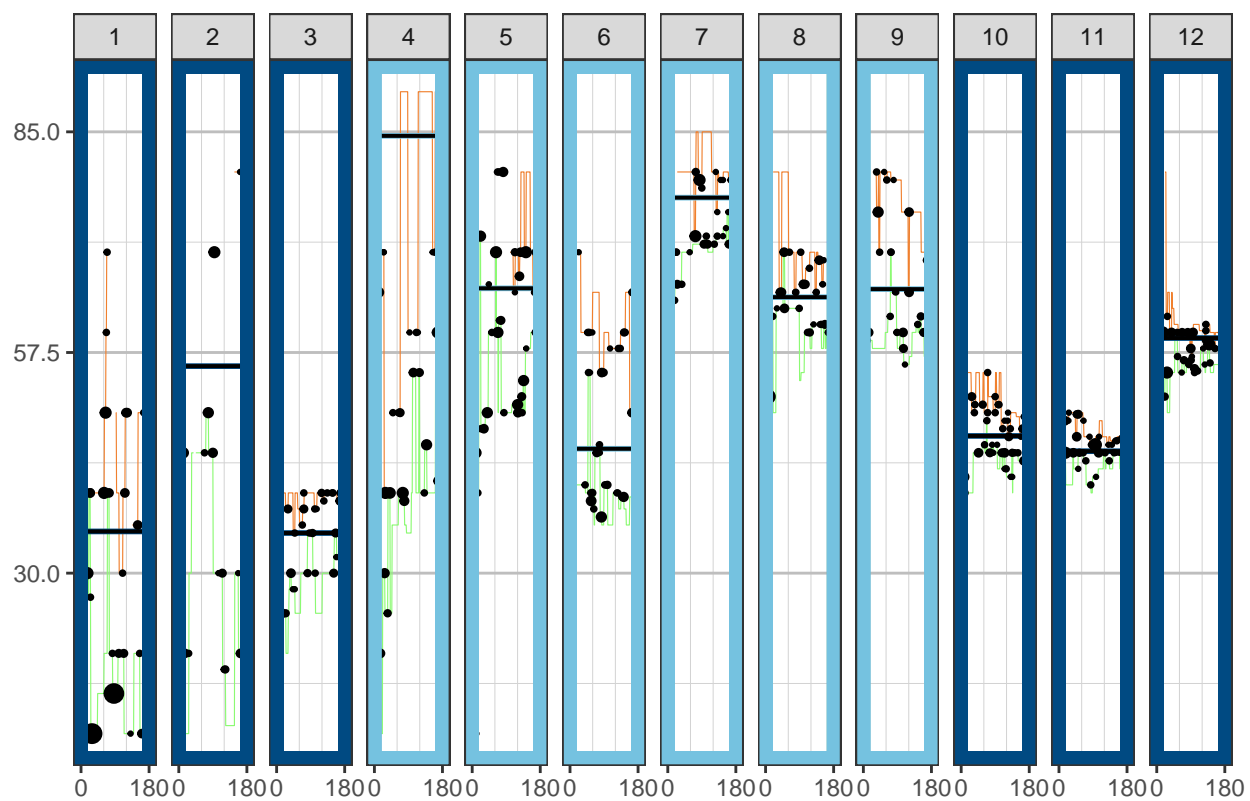




Cohort 30 – time series



Cohort 31 – time series



Cohort 32 – time series

