

# Who supplies liquidity, how and when?

Presentation prepared for the 14th BIS Annual Conference  
Lucerne, June 2015

Bruno Biais, Fany Declerck, Sophie Moinas  
Toulouse School of Economicc

# Who supplies liquidity ?

Old days: specialists, market makers

Modern stock markets: prop traders, high frequency traders

How? Non immediately executed limit orders ?  
Trade on reversals (Nagel, 2012) ?

Why? Better information/technology (lower adverse selection costs)?  
Better ability to bear inventory risk?  
Better connection to markets?

When? Does liquidity evaporate when needed? Crisis, small caps

Consequences? Shift adverse selection costs to others?  
Stabilize market by accomodating buying or seling pressure?  
Profitable? Limits to arbitrage (Shleifer Vishny, 1997, Gromb Vayanos 2002)

# 2010: Ancient Greek crisis



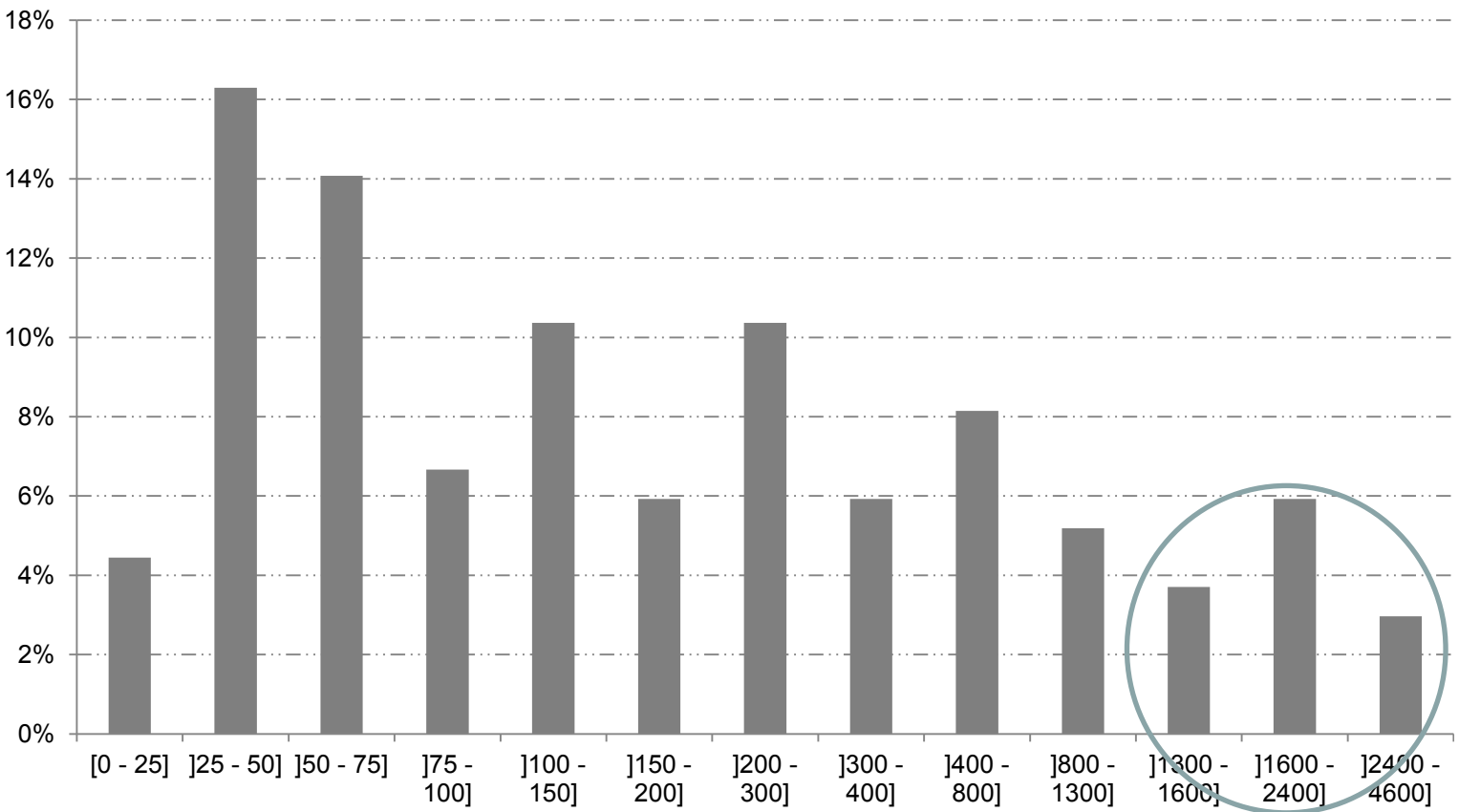
April 23: Grece  
asks for bailout

May 7:  
bailout

June 14:  
downgrade

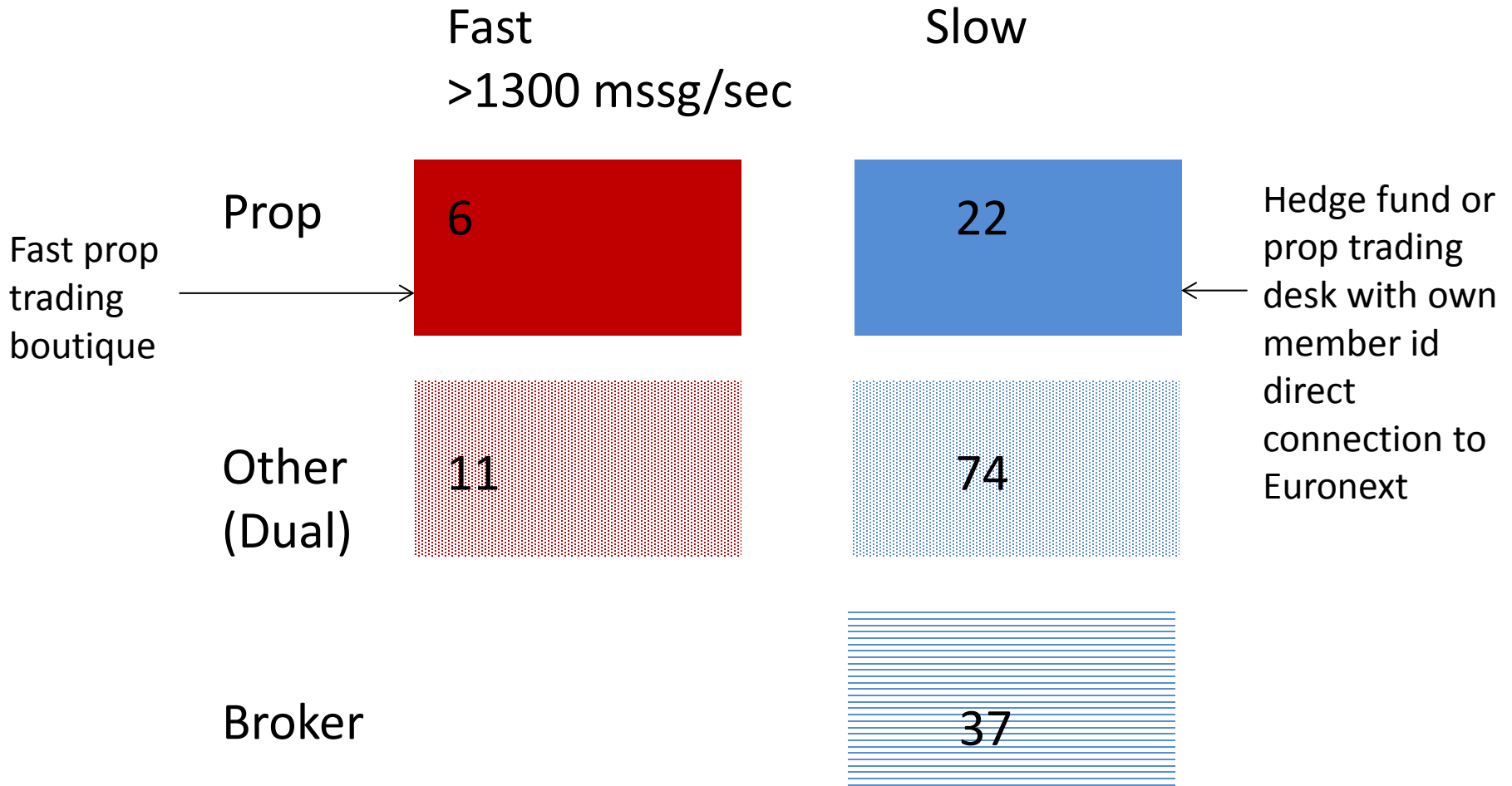
# Euronext members vary in terms of connection speed

% of members



Max # messages per second

# Five categories of members



# Sample of stocks

23 French stocks, Euronext

Data > 7To = 1,000 CD

10 large caps (1 financial, 9 non financial)

float between 1,048 and 3,884 million euros

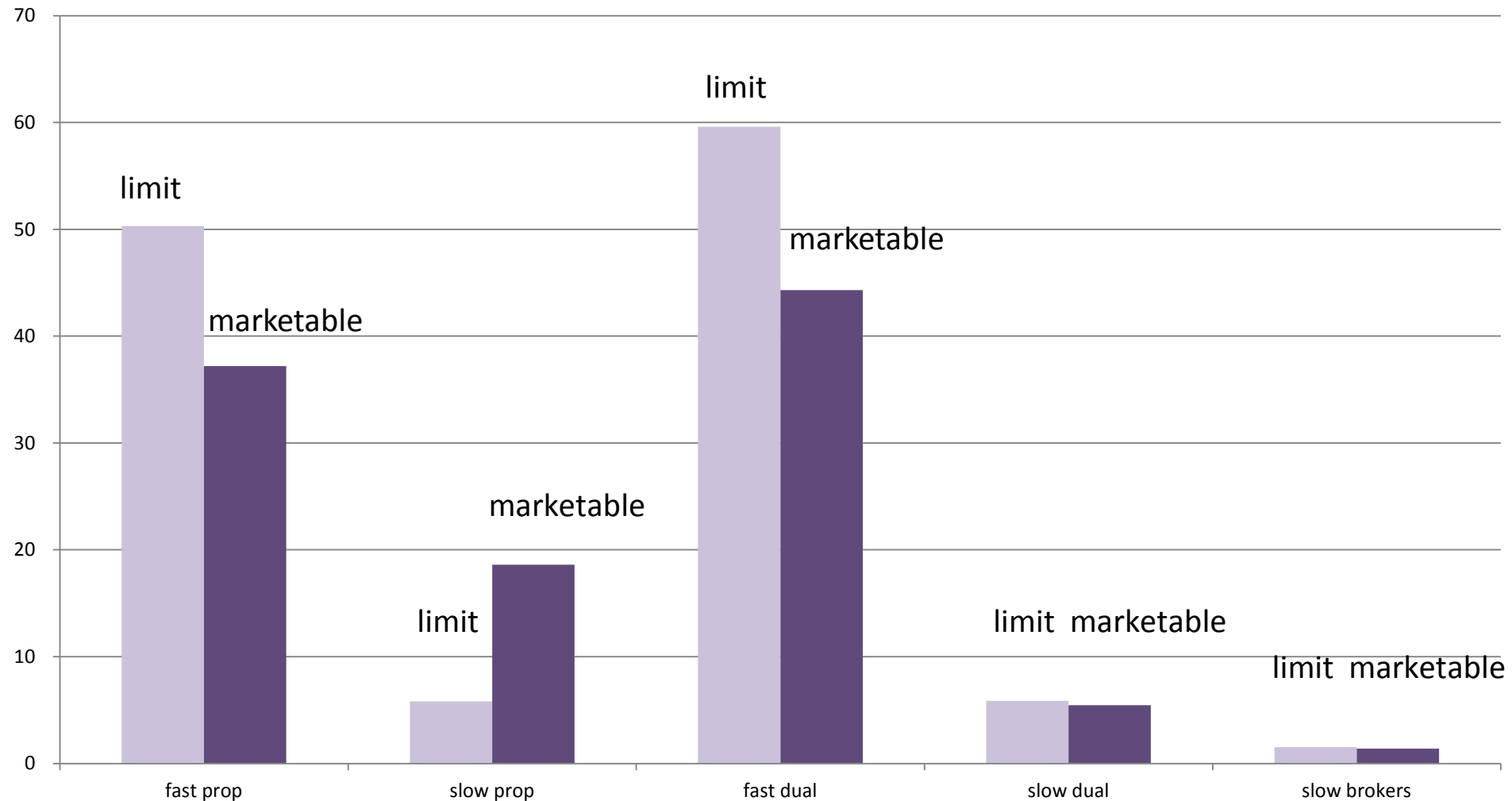
9 mid caps (1 financial, 8 non financial)

float between 181 and 960 million euros

4 small caps (non financial)

float between 51 and 145 million euros

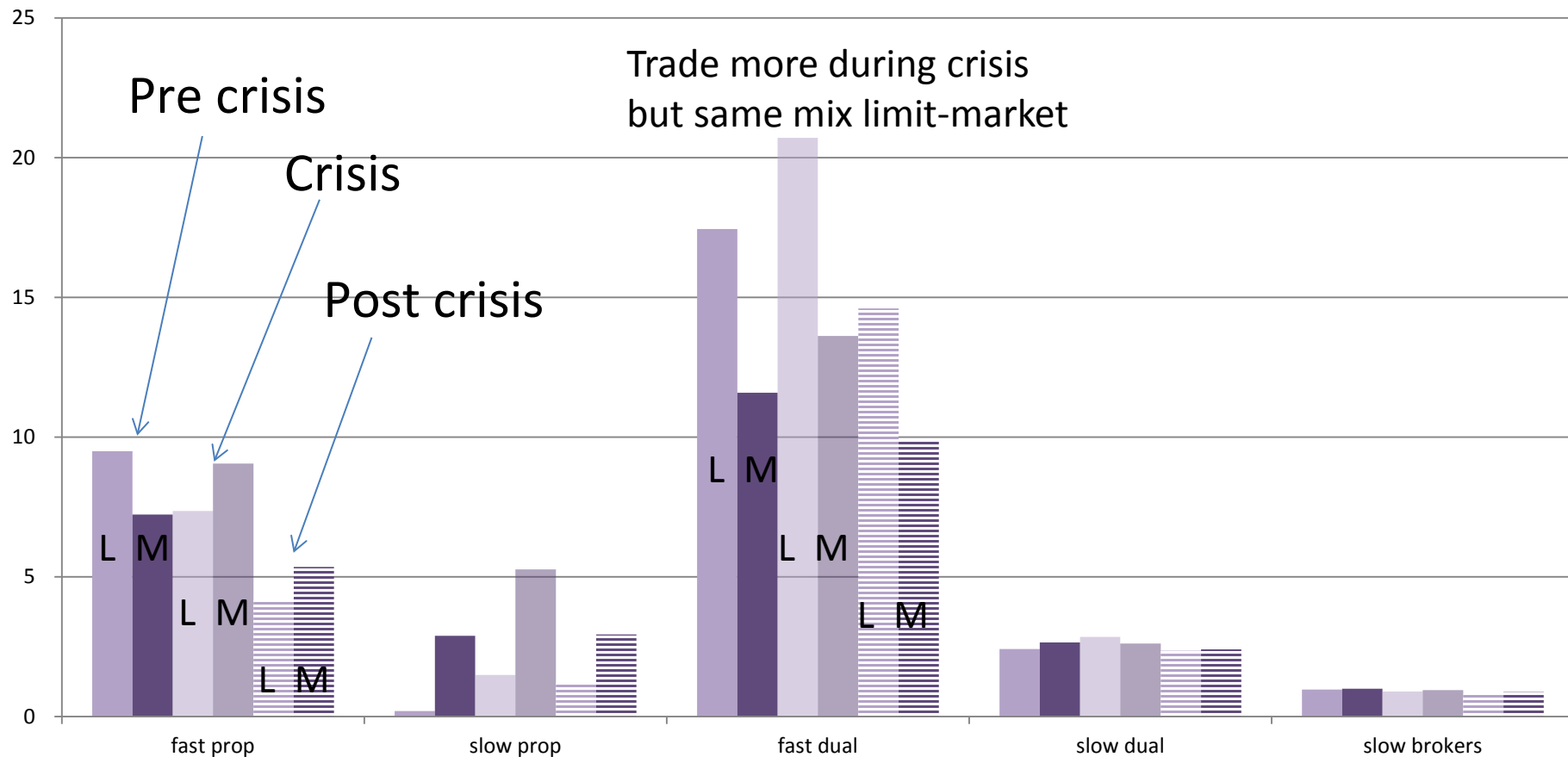
# Number of trades per member, stock & day



Fast trade more, rely more on non immediately executed limit orders  
Slow prop trade less, rely more on marketable orders

# Number of trades per member, stock & day

## Small cap, before, during and after crisis



Crisis => Fast prop traders place more marketable orders  
 But trade less with (non immediately executed) limit orders:  
 reduce this type of liquidity supply

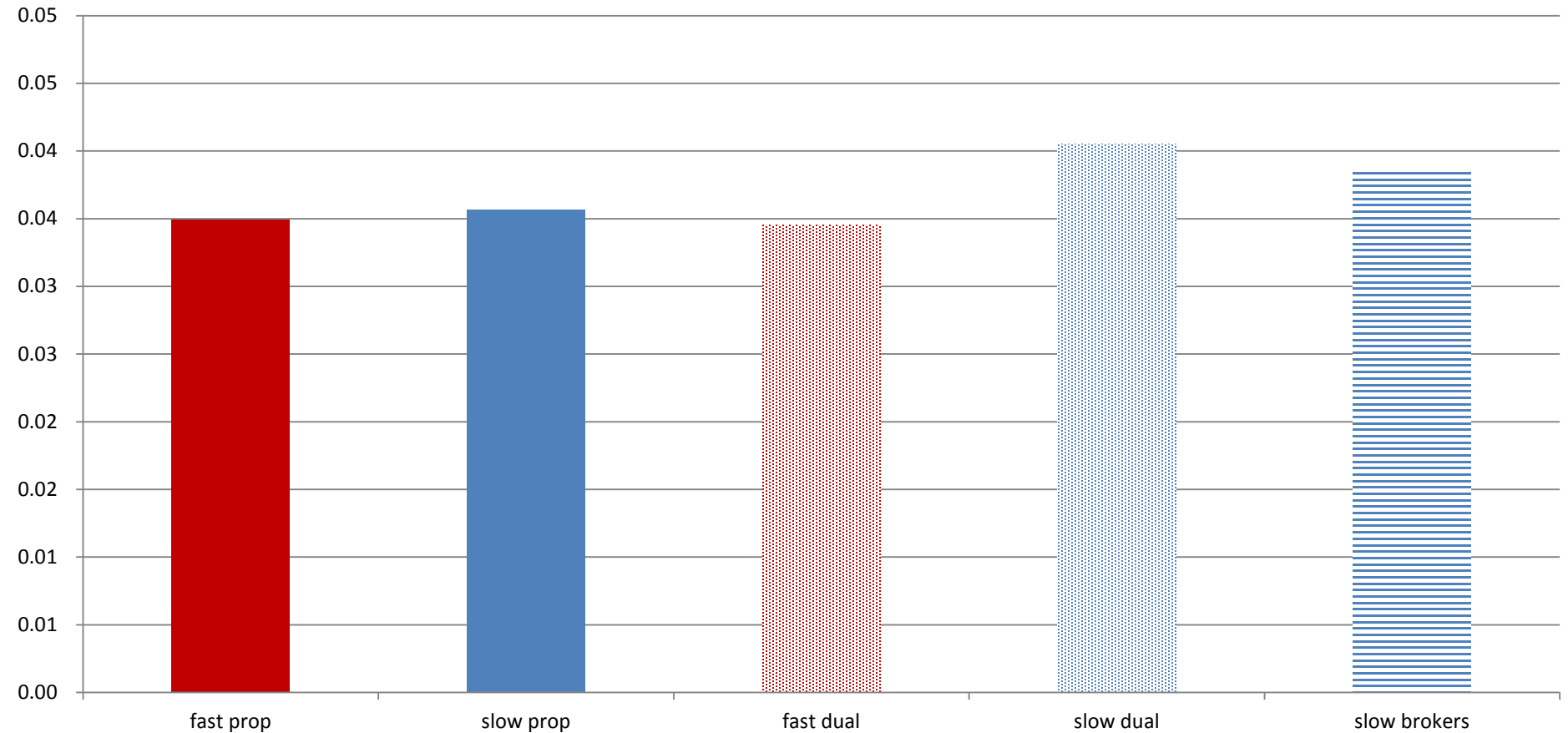


# Marketable orders

Who places these orders? When? Are they consuming liquidity? Are they profitable? Is behaviour different during the crisis?

# Informational content of marketable orders

$$(M_{t+2\min} - M_{t-}) / (M_{t-}) * (\text{sign of take order})$$

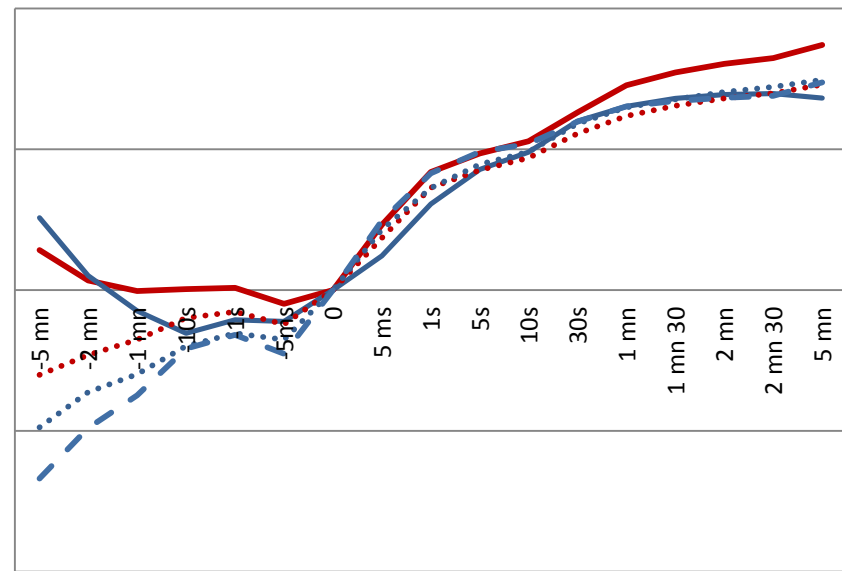
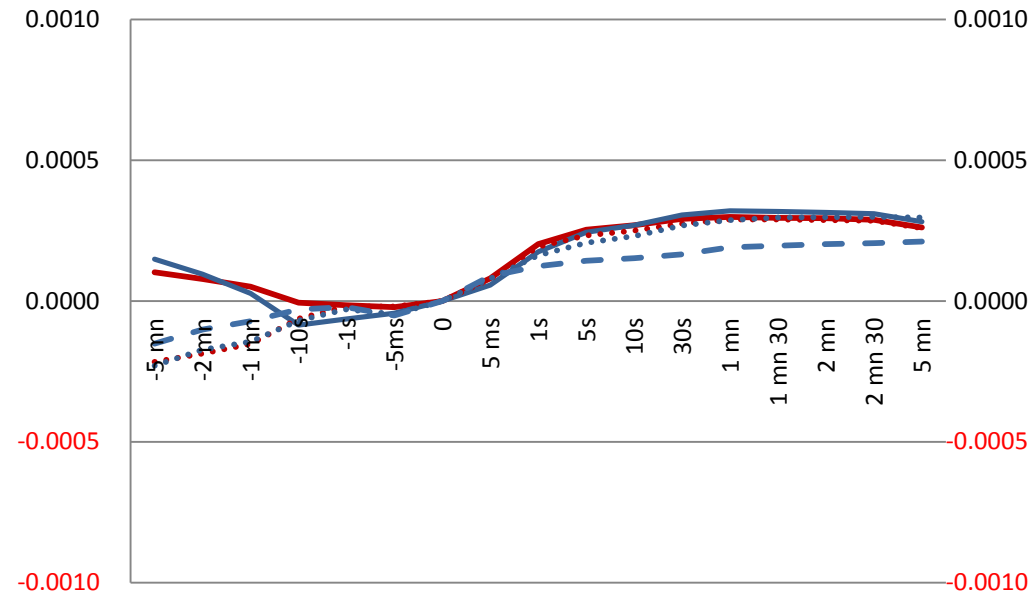


All marketable orders have info content, fast similar to others:  
Around 4 basis points  
(all impose adverse selection costs on others)

# Momentum & contrarian

## Panel A: large caps

## Panel B: Small & mid caps



— fast prop (585268 obs)    — slow prop (1070261 obs)  
..... fast dual (1221454 obs)    ..... slow dual (872885 obs)  
- - - slow brokers (94881 obs)

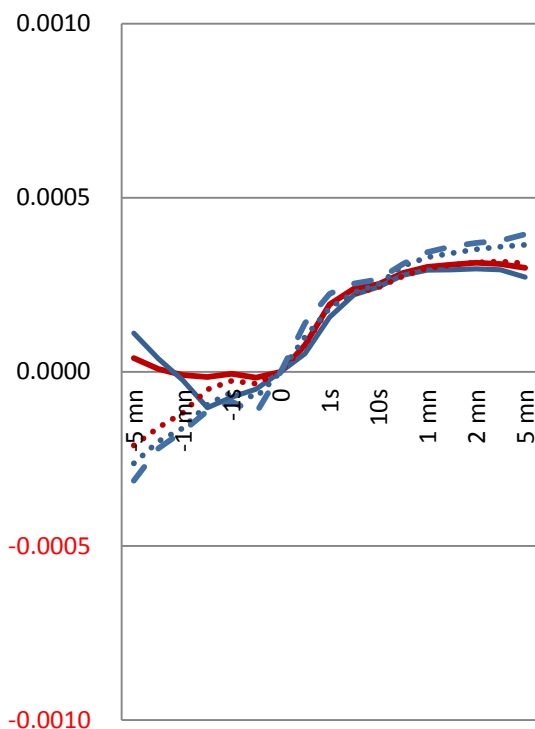
— fast prop (71856 obs)    — slow prop (135587 obs)  
..... fast dual (213851 obs)    ..... slow dual (314854 obs)  
- - - slow brokers (57938 obs)

Dual (including fast) & brokers' ride momentum: consume liquidity

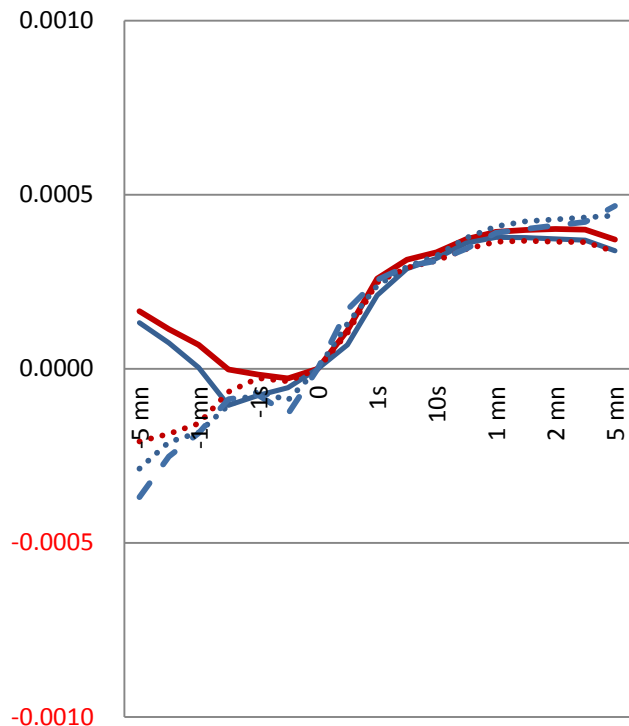
**Fast** & **slow** prop contrarian: provide liquidity, also in small caps

# During crisis **Fast prop** & **slow prop** keep supplying liquidity with contrarian marketable orders

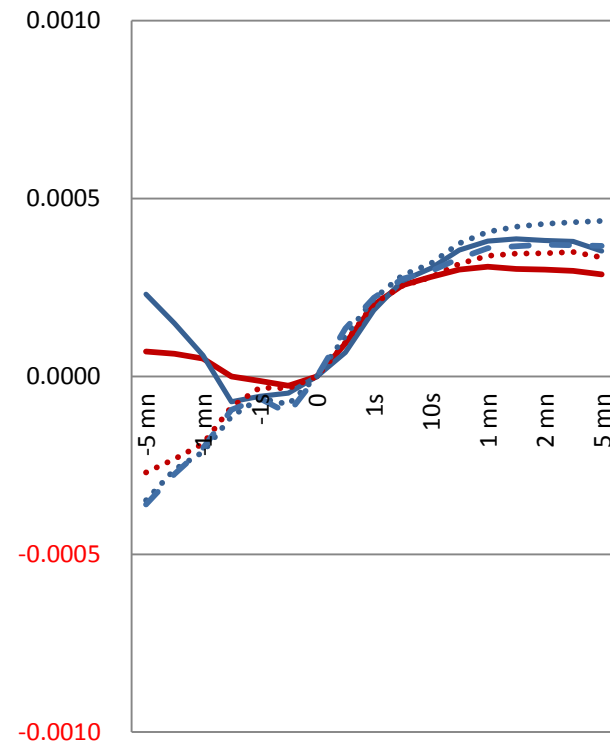
### Pre-crisis



### Crisis



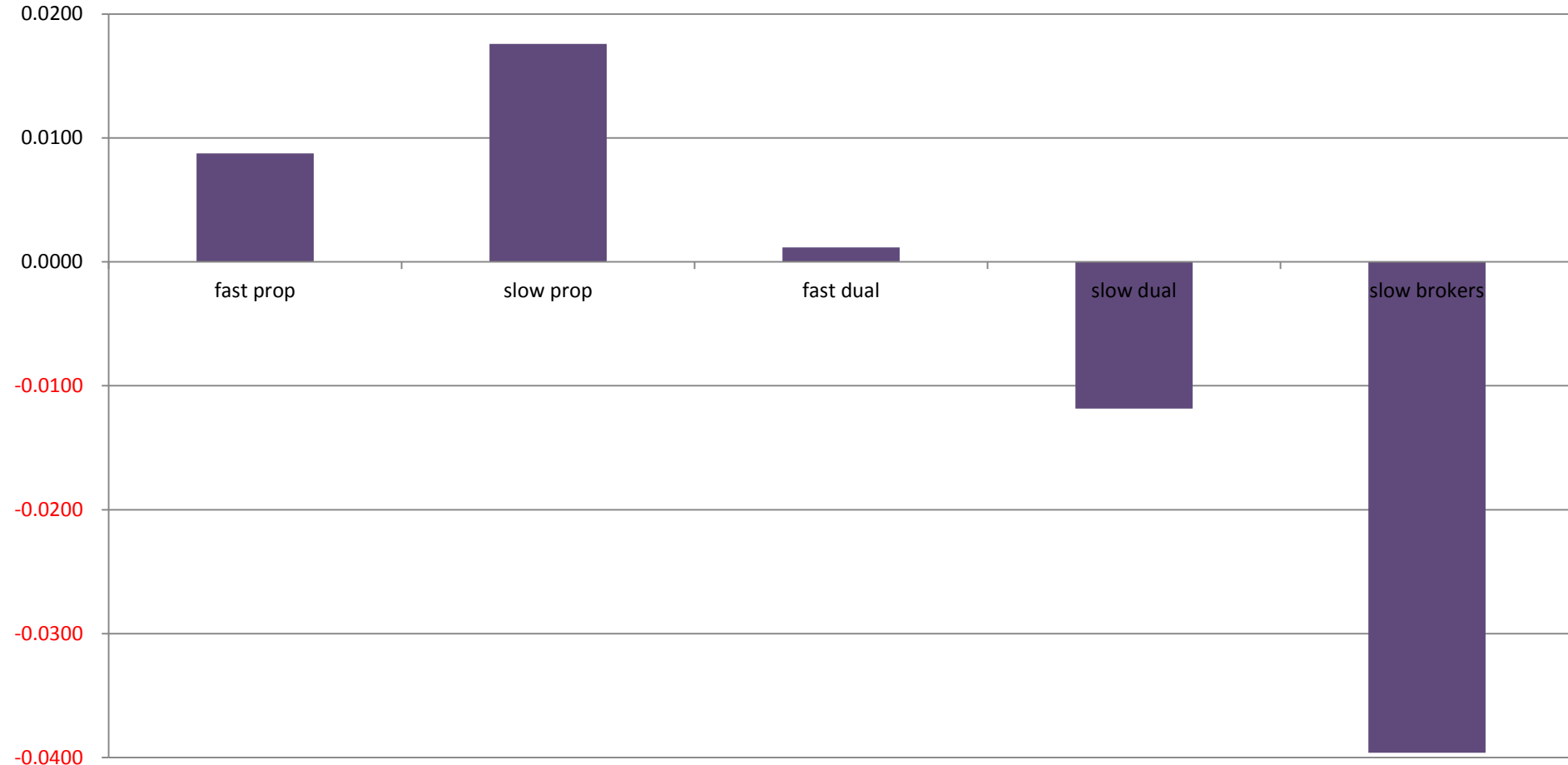
### Post-crisis



Contrast with reduced liquidity supply via passive limit orders

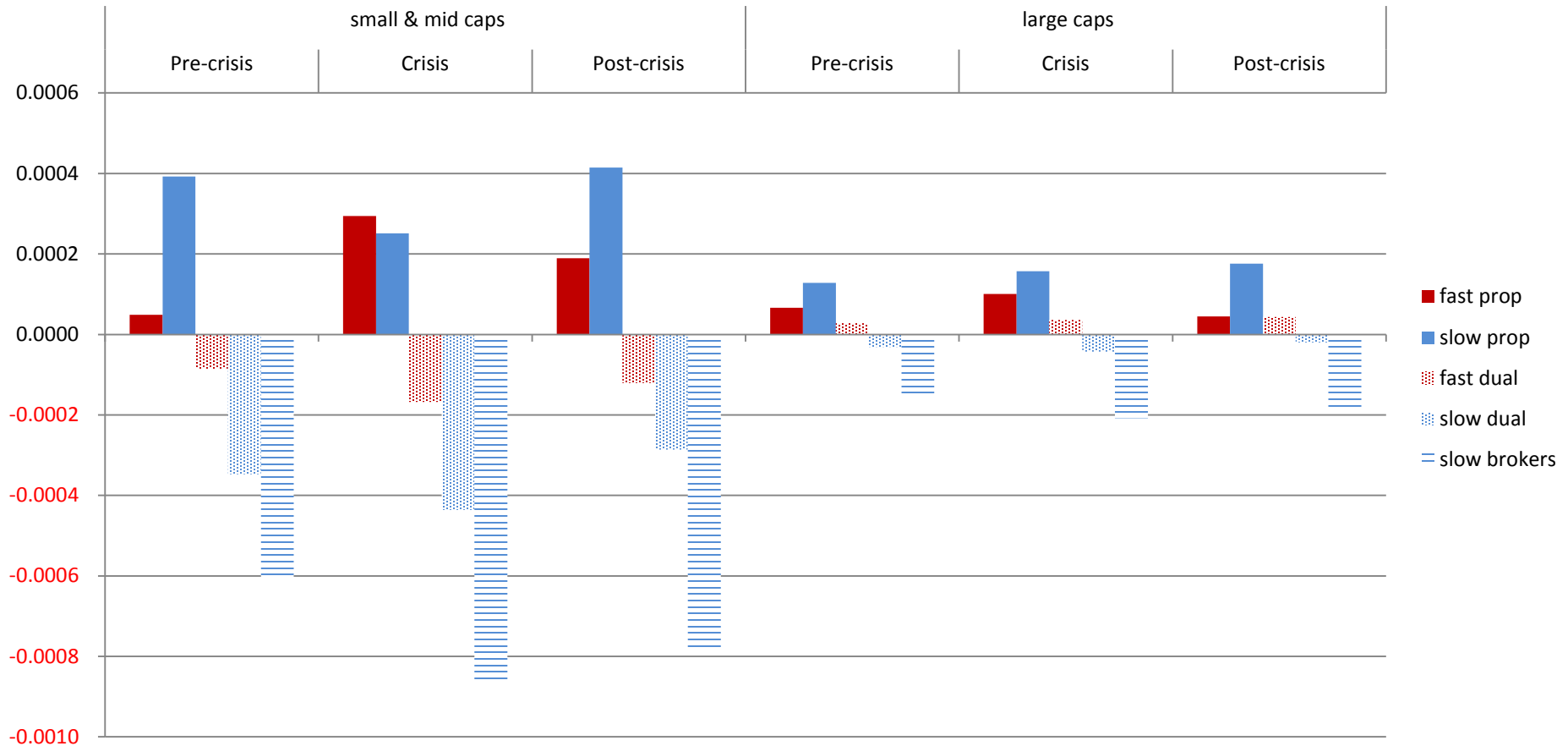
# Prop marketable orders profitable, not others

$$(M_{t+2\min} - P_t) / (M_t) * (\text{sign of marketable order}) * 100$$



Liquidity supplying contrarian orders profitable: info content > spread  
Liquidity consuming momentum orders not profitable

# Liquidity supplying, contrarian, proprietary marketable orders also profitable during crisis and for small caps



During crisis, prop traders continue to supply liquidity with contrarian marketable orders, which continue to be profitable

# Limit orders (non immediately executed)

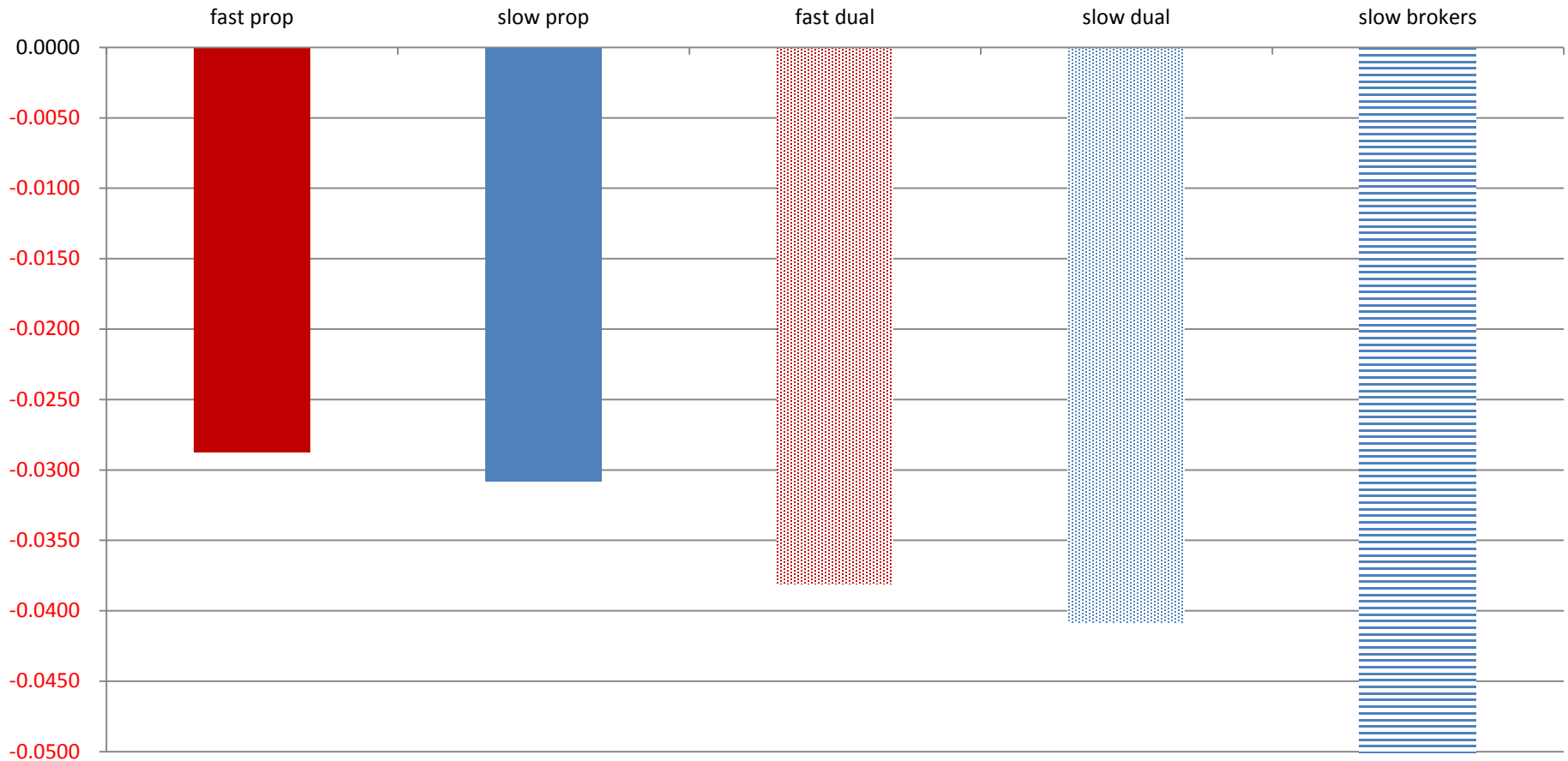
Who places these orders? When?

Are they profitable?

Is behaviour different during the crisis?

# Adverse selection cost for limit orders: after limit buy order hit, price drops (symmetric for sell)

$$(M_{t+2\min} - M_{t-}) / (M_{t-}) * (\text{sign of make order})$$



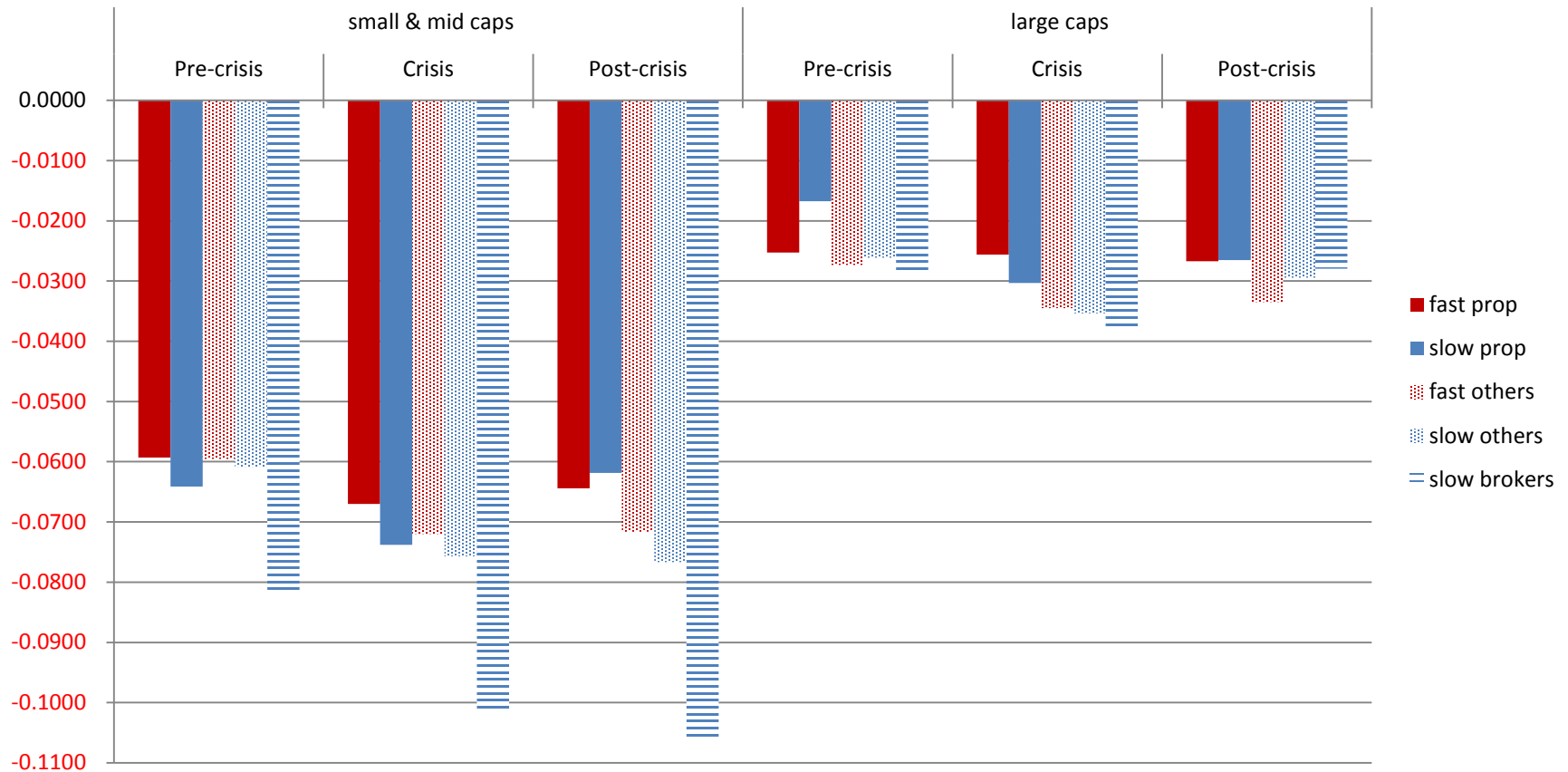
All limit orders adversely selected, **Fast prop** less so



# More adverse selection during crisis & for small caps

**Fast prop** similar to dual before crisis

cope better with crisis, especially for large caps



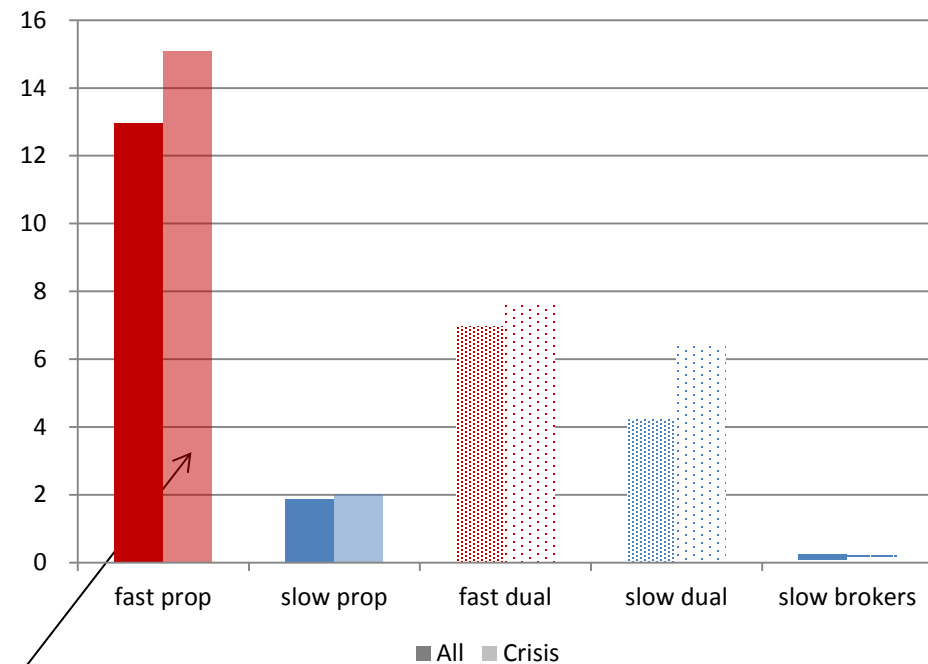
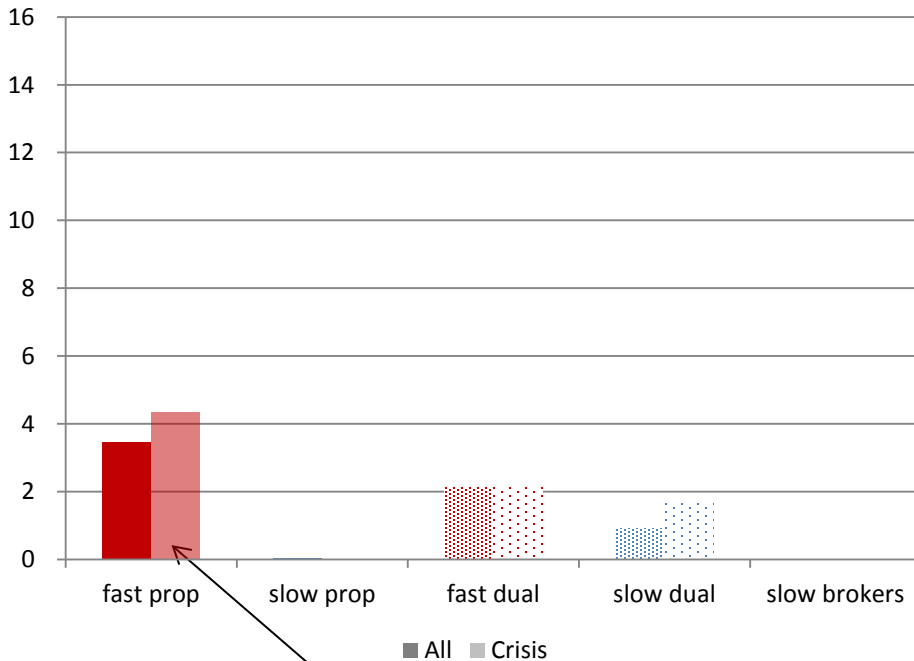
Fast prop rely less on limit orders, but avoid losses on these orders

# # of cancellations & # of updates to less aggressive normalized by # of trades

**Fast prop** monitor market & cancel more/update before pricked off

Panel A: Update

Panel B: Cancel



especially during crisis: reduce A.S cost

# Conclusion

**Prop** traders, fast or slow, provide liquidity with contrarian marketable orders: inventory bearing capacity

=> help market absorb shocks, even during crisis

=> profitable liquidity supply

**Fast** traders provide additional liquidity with non immediately executed limit orders, only **fast prop** traders do so without making losses

Monitor market to cancel & update limit orders => reduce A.S.

They have superior technology & incentives to do so

# Unintended consequences of regulation ?

MIFID 2: cap ratio of messages to trade

=> reduce ability of fast traders to cancel/modify limit orders

=> reduce ability to cope with adverse selection

=> reduce liquidity supply via passive limit orders

Banking regulation: more difficult & costly to conduct prop trading

=> reduce prop traders' ability to help market accommodate liquidity shocks (more limits to arbitrage)

# Connection speed correlated with throughput

