DISCUSSION OF

Corsetti, Lafarguette, Mehl – 'Fast Trading and the Virtue of Entropy: Evidence from the Foreign Exchange Market'

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8th Workshop on Exchange rates

Banque de France, Paris – 14 December 2018



Summary – Fast Trading & Entropy

- Research question:
 - Is **fast trading** (FT) **good or bad** for markets?
 - Look at high-frequency dispersion of quoted prices (and news impact) on FX markets
 - Extract measure of FT share
 - Entropy as main measure of information on markets

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• Empirical exercises:

- 1. Regress entropy over 30m horizon on a measure of FT
- 2. Natural experiment on tighter regulation on FT
- 3. Regress measures of market efficiency on macro news, FT share, entropy and controls

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Results:

- Fast trading increases entropy, rather than reacting to it
- Entropy increases market efficiency... prices closer to RW

Underlying process

$$x \sim \mathcal{N}(0, \sigma_x^2)$$

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• Ex-ante Entropy (∼ Uncertainty)

$$H(X) = -\int_{\mathcal{X}} p(x) \log p(x) dx = -\mathbb{E}\left[\log p(x)\right] = \frac{1}{2} \log(2\pi e \sigma_x^2)$$

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$$s^{i} = x + \eta^{i} \qquad \eta^{i} \sim \mathcal{N}(0, \sigma_{\eta}^{2})$$

$$\mathcal{I}(X, s) = H(X) - H(X|s) = \frac{1}{2} \log \left[1 + \frac{\sigma_{x}^{2}}{\sigma_{\eta}^{2}} \right]$$

update their information and post their prices

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• Markets aggregate information transferred via n trades

$$\mathcal{I}(X,S) = H(X) - H(X|S) = \frac{1}{2}\log\left[1 + \frac{n\sigma_x^2}{\sigma_\eta^2}\right]$$

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- This paper: mechanism by which FT changes market structure
 - \implies inject noise $\sigma_n \uparrow \implies$ reduce market efficiency
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look at effects of variation in FT intensity as if exogenous

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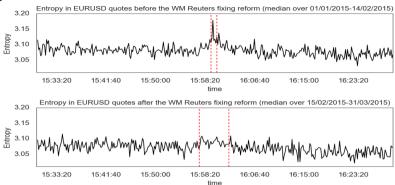
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- Why exogenous variation of FT across time?!
- · Likely to be endogenous...
- What is the mechanism that endogenises it? Which are the implications?
- Higher disagreement ⇒ higher price dispersion/higher entropy ⇒ ...
 more arbitrage opportunities ⇒ more FT

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Natural experiment



- Some difference in the entropy before/after change of regulation
- Is it due to **outlawing** of some **market manipulation** practices?
- Is just temporary?
- Does not exclude two-way causation!

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News impact

	Variance ratio test (pvalue) No controls
Normalized fundamental surprise	-0.090*** (0.01)
Share of fast traders (log)	-0.128** (0.01)
Norm. surprise x Share of fast traders (log)	0.099***(0.0)
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Norm. surprise x Share of fast traders (log)	0.099***(0.0)
	Variance ratio test (pvalue) No controls
Normalized fundamental surprise	-0.597* (0.09)
Entropy (log)	-0.905*** (0.0)

Possible Interpretation:

High uncertainty + informative news \Longrightarrow large information transfer \Longrightarrow fast adjustment

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Information transfer and disagreeement

• Information transfer rather than entropy

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Information transfer and disagreeement

• Information transfer rather than entropy

- Observation:
 - Even if mean/median (survey) expectation on target
 - Ex-ante beliefs may be very disperse
 - Higher trading volume
- Standard deviation of market surveys

Wrap-up

- Hard to make causal statements
- Entropy depends on ex-ante uncertainty and disagreement
- FT may depend on price dispersion

Interesting and stimulating paper!

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