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From dissonance to resonance: cognitive interdependence in quantitative finance

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Abstract

This study explores the elusive social dimension of quantitative finance. We conducted three years of observations in the derivatives trading room of a major investment bank. We found that traders use models to translate stock prices into estimates of what their rivals think. Traders use these estimates to look out for possible errors in their own models. We found that this practice, reflexive modelling, enhances returns by turning prices into a vehicle for distributed cognition. But it also induces a dangerous form of cognitive interdependence: when enough traders overlook a key issue, their positions give misplaced reassurance to those traders that think similarly, disrupting their reflexive processes. In cases lacking diversity, dissonance thus gives way to resonance. Our analysis demonstrates how practices born in caution can lead to overconfidence and collective failure. We contribute to economic sociology by developing a socio-technical account that grapples with the new forms of sociality introduced by financial

models – disembedded yet entangled; anonymous yet collective; impersonal yet, nevertheless, emphatically social.

Keywords:

financial models cognitive interdependence quantitative finance performativity risk arbitrage

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Notes

1. See also Callon (1998, 2007), MacKenzie and Millo (2003), Mackenzie (2006); for reviews, see Fligstein and Dauter (2007), Fourcade and Healy (2007), Ferraro et al. (2005). A related stream of work (Dodd, 2011) has examined the sociology of money, especially in the context of the quantitative revolution and more recent rise of credit derivatives.

2. The merger was successfully completed on 1 July 2003, and produced an annualized return of 17 per cent for Max and his team.

3. Khandani and Lo (2007) explain the crisis of August 2007 by the similarity in strategy across hedge funds.

Additional information

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Daniel Beunza is Lecturer in Management at the London School of Economics. He has taught at Universitat Pompeu Fabra (Barcelona) and at Columbia University. He has studied derivatives traders, securities analysts and his current research is on financial exchanges and responsible investment. Along with others, Beunza's research has led to the development of the social studies of finance

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David Stark is Arthur Lehman Professor of Sociology and International Affairs at Columbia University where he directs the Center on Organizational Innovation. Stark's most recent book, The sense of dissonance: Accounts of worth in economic life (Princeton 2009) examines the perplexing situations in which organizations search for what is valuable